Vol. VII DECEMBER, 1917 No. 12

The Canadian Medical Association Journal

Contents

TORONTO: MORANG & CO., LIMITED, PUBLISHERS

The Canadian
Medical Association Journal

VOL. VII. DECEMBER, 1917 No. 12

THE TREATMENT OF NERVE, MUSCLE, AND JOINT INJURIES IN SOLDIERS BY PHYSICAL MEANS

BY R. TAIT MCKENZIE, *Major, R.A.M.C.*

Professor in Physical Therapy, University of Pennsylvania

CAREFUL analysis of four thousand cases returned from overseas during the period between July 12th and December 29th, 1916, shows that there were one thousand men suffering from gunshot, shrapnel, and shell wounds, five hundred from disorders of the nervous system, four hundred from injuries to bone, and four hundred heart and lung cases, excluding tuberculosis. Allowing for overlapping in this total of twenty-three hundred, at least 50 per cent. of returned men would require some treatment by electricity, hydro-therapy, radiant heat, massage, or muscular reëducation.

The sporadic wounds produced in civil life have been multiplied by war into groups. The exceptional has become the ordinary. Torn and mangled bodies have to be patched and remade, and functions, lost or weakened, must be gradually coaxed back toward normal by means that in pre-war days we often neglected or even despised. Old conditions have come up with new names, and new conditions have had to be met by a rearrangement and application of old means.

Before the war physical therapy was in the hands of a few enthusiasts in the profession, but when the need became urgent, a cry was raised throughout England and France for medical officers who knew how to apply it, and the war will not be an unmixed

Read at the forty-eighth annual meeting of the Canadian Medical Association, Montreal, June 14th, 1917.

evil if by its means these physical agents are more closely incorporated in the future practice of medicine and surgery.

In the great orthopædic centres established throughout England by Lieutenant-Colonel Sir Robert Jones, inspector of orthopædics, in the sixteen or more command depots scattered over the British Isles by the director general, Sir Alfred Keogh, each housing more than four thousand men, these methods form the backbone of the treatment, and the Surgeon General of the United States has already sent over a contingent of orthopædic surgeons to make themselves familiar with the subject and to establish centres to accommodate thirty-five thousand cases in France.

Canada has not been unmindful of her responsibility to her returned men, and the Military Hospitals Commission is rapidly providing the staff and equipment necessary to bring back as many men as possible to usefulness in civil life.

While the conditions in Canada must, of necessity, differ from those in an English command depot, it is interesting to know that during the first six months of treatment in the command depot at Heaton Park about twelve hundred men (nearly 50 per cent.) were returned to the fighting line by this treatment alone, while another 30 per cent. were made fit for service on the lines of communication or more sedentary work at home, the average time spent by each patient being under three months. The details of this work I have described elsewhere (see *Proceedings of the Royal Society of Medicine*, 1916, volume ix, surgical section, pp. 31–62), but whatever the conditions under which the work is done, the means are the same, and the results are sure.

Briefly stated, the conditions to which physical therapy applies, are as follows:

1. Injury to peripheral nerves, all the way from the bruising of a nerve trunk to its destruction and restoration by surgical means. These injuries are accompanied by weakness or paralysis, muscular wasting, and contractures, conditions met by the application of wet or dry heat to keep up the circulation; support in proper position by splints, to prevent the overstretching of weakened muscles, and the resultant permanent contraction of those that are unimpaired; galvanic, and afterwards faradic, stimulation of the affected muscles; massage to keep up or improve their nutrition, passive movement to prevent contraction and limitation of the normal range of the joints; progressive active movements, joint by joint, to bring back and strengthen voluntary power, and later,

gymnastic and vocational training to fit the patient to fill with skill and efficiency his place in civil life.

2. Scar tissue, either in preparation for, or after operation. The bullet may leave a small entrance wound, but its course through the tissues may leave great areas in which muscle, fascia, tendon, nerve, periostium, and skin are matted together in one confused distorted mass, strangling the circulation and leaving the limb blue, clammy, moist with continual perspiration, and so painful that the patient winces at the slightest touch. Such wounds are treated by the whirlpool bath, which in twenty minutes changes the cold purple of the painful hand into a warm crimson, and enables the masseur to stroke, knead and otherwise move a joint in a way that no amount of persuasion would have made tolerable. The hastening of repair in these scars by diathermy and ionization, and the stretching of beginning contractures, by careful manipulation are among the triumphs of these methods.

3. Old septic wounds, long since healed, are frequently persistently painful, and a focus of infection may be discovered by massage. It is a frequent experience for a masseur to find part of a long scar become painful, then red, and finally to see a sequestrum or other foreign body extruded that would have lain for months a source of trouble, without the stimulation of heat and massage to hasten its removal. Naturally, such cases need most careful supervision, and a rough and unskilled operator may easily do more harm than good. Electricity, heat, and massage have thus a most important place in softening scar tissue, either before or after operation, and making the work of the surgeon easier.

4. In all post-operative conditions the cure must be completed by physical means. It is not enough to break down an adhesion or restore a joint to potential usefulness. Its nutrition must be improved, and the patient must be taught to use it. Even if it is possible to move it throughout its whole range a cure is not complete until the patient can do this himself with power and skill. He must be taken through a course of reëducation, beginning with free simple movements, advancing to those that are harder and more complex. Devices for this purpose must be designed and employed to prepare him for the more complicated actions required by the craft he may elect to practise.

5. Functional neuroses, which take the form of palsies, contractures, loss of sight, speech or hearing, areas of anæsthesia, or hyperæsthesia, show many marvellous cures by physical means. Contractures are slowly stretched and kept in place by splints,

systematically massaged and exercised by the faradic battery where voluntary movement cannot be obtained, and brought back to usefulness by a combination of hypnotism, suggestion, encouragement, and the gradual replacing of them by voluntary movement. The operator here must be both priest and physician, for the mental is even more important than the physical treatment, and these very real conditions, beyond the patient's control, in most cases, require persistent intelligent treatment, sometimes over long periods of time.

6. The conditions variously grouped under the name "shell shock" which vary all the way from minute hæmorrhages into the brain substance, caused by concussion, to fear and intolerable weariness must be treated by this means. When the soldier in the trenches begins to move his head rhythmically, to twitch his arm, or clutch at the sound of a shell, the regimental surgeon, if he is wise, sends him back to the rest camp for a week or two. If he is kept until the inevitable smash comes, his recovery will be a matter of months, at best, and he is usually put out of commission permanently. Tremors, coarse and fine, up to the point of a general convulsive seizure, rhythmic movements, increasing when the man is spoken to, and calming down when he is left alone are characteristic. Many of these men are martial misfits, never built for the enormous stress of modern warfare, and rapidly go to pieces under it. They usually present a history of nervousness, frequently with enlarged thyroid, rapid pulse and prominent eyes, and all such cases call for rest and sedative treatment, by the continuous bath at skin temperature (94°), hours of rest in bed daily, and the substitution of gentle massage and electricity for active movement at first, with a gradual increase of exercise, beginning with a slow walk and ending with gymnastic games and vocational training.

7. The "soldier's heart" is but a symptom of overstrain. The rapid pulse and breathlessness, the enlarged thyroid, all show the nervous origin of the conditions now known familiarly to medical officers as D.A.H. The faradic or high frequency current, the sedative bath, gentle massage and rest quickly reduce a rapid pulse rate and allow him to bear without danger, an increasing load in the form of gymnastic exercise, walking, and manual labour.

8. Debilities, whether due to typhoid, dysentery or exhaustion are built up again and made ready for service by graded exercises of effort, like light gymnastics, and of endurance like walking, until they can stand the amount of work to which they were formerly accustomed.

9. The place of physical remedies in the treatment of sprains and after fractures, in rheumatism and gout, in flat foot and other postural defects need not be discussed here. Enough has been said to show that the majority of the men who fill our war hospitals, command depots and convalescent homes must depend for most of their present treatment, and for their future efficiency, on the masseuse, the practitioner of electro and hydro-therapy, the physical instructor and the teacher of vocational training. The course usually followed begins with preparation by heat, either wet, dry, or produced by electricity, on through the stimulation of nutrition by massage and passive movement, then to simple exercise taken voluntary and eventually to skilled movements by gymnastics, games and handicrafts.

The equipment necessary consists of:

Electricity

1. The galvanic or continuous current produced by chemical means which causes no muscular contraction except when interrupted. The body contains a large amount of sodium-chloride and other salts in solution, and the constant current splits the salts into their constituents, the metallic portion being attracted to the cathode and the acid portion to the anode. Fatigue products may thus be sent on their way and the "refreshing" action of the current produced. It has a profound effect on metabolism, and salts of lithium, sodium and potassium can be driven into the tissues by its means, a method known as ionic medication. For painful conditions like neuritis, neuralgia and inflammation, the anode is applied, and for any condition requiring active hyperæmia, like Volkman's ischæmic contraction, the cathode is used. The interrupted galvanic current is of use in muscle testing where its chemical action on the muscle produces a sluggish contraction where no response to faradism can be obtained.

2. The faradic or alternating current produced by induction. This acts on a muscle very much like the normal nerve impulse in a healthy muscle. It is conducted along the nerve and enters the muscle through it, throwing it into a series of contractions, synchronous with the make and break of the current. It acts as a substitute when the normal nerve impulses are not fully conveyed to the muscle and can be used to increase nutrition and circulation in partial paralysis. It may be necessary to use both currents in some cases because the faradic does not touch those muscles or parts of muscles which do not respond to it, and the

galvanic may be necessary to reach them and give an even contraction.

These two currents are combined on a medical switchboard or earth-free pantostat, although the faradic is usually replaced by the sinusoidal, which is a current interrupted and reversed in such a way that its strength, starting at zero, rises in a curve to its apex on the positive side, declines to zero, and then rises in the same way on the negative side producing a series of sine curves on alternating sides. It is less painful than the usual faradic current. The faradic is given alone by small portable batteries, preferably of the Smart-Bristow type, and is of great value in exercising weakened muscles by graduated contraction.

3. The high frequency current used in diathermy is a current of high tension and small volume, produced by a special apparatus. It has no power to contract muscles, but produces heat caused by the resistance of the tissue through which it passes. It is useful in producing hyperæmia in parts where the circulation is deficient and as a preparation for a massage or movement. It causes an immediate sensation of warmth and has great powers of deep penetration.

Radiant Heat

Radiant heat is applied by means of electric lamps and causes a dilation of the surface capillaries, flushing the skin. It also makes an excellent preparation for massage in scar tissue, myalgia, and in joints that are stiff and cold or rheumatic. The most available forms are:

1. A lamp of about sixty candle power contained in a metal cone with a reflecting surface. This is moved about a few inches away from the surface of the part to be treated until the surface is well reddened, a process requiring three or four minutes.

2. Local electric light baths composed of six to twelve, sixteen candle power lights in a closed metal case lined by a reflector. The temperature is indicated by a thermometer and may be raised to 180°, the treatment lasting up to twenty minutes. It is especially valuable in painful rheumatic joints, myalgia, and sprains, and makes an excellent preparation for massage.

3. The cabinet, or full electric light bath, containing a large number of electric lights. In this cabinet a patient is completely enclosed except for his head. The temperature beginning at 100° is brought up to 180° and is indicated by a thermometer. Cold compresses are wrapped about the head and the treatment

lasts about thirty minutes. It is used to increase general elimination and is of value in all forms of intoxication—alcoholic, gouty, rheumatic, or nephritic.

Hydro-Therapy

1. Hydro-therapy plays an important role in the treatment of the wounded man, as it has the additional resource of cold as well as heat. The cases that derive most benefit from hot water are great areas of contracted scar tissue, painful stumps, weakened and stiffened joints. Slight adhesions may be broken down frequently after its use, and all parts are more easily manipulated.

Irritable bruised nerves are made worse by heat, so that for them baths should not be raised above 100° and manipulation or massage should never be used, the water should here act as a comforting poultice.

1. A sort of gymnastics of the circulation is given by the alternate use of heat and cold water in the Scotch douche or the local contrast baths, advocated by Sir Robert Jones.

2. The full sedative bath at 94° lasting for an hour is of great value in shock and in D.A.H. cases.

3. The whirlpool baths, first used in France during the war are the most valuable single appliance in the after-treatment of wounds. The arm or leg is plunged into a vessel containing water at about 105° which is circulated by jets, set at an angle, or by a propeller. Air is also introduced so that the limb is surrounded by a swirling bubbling current, the temperature of which is raised as high as 120° if the patient can bear it. The air bubbles increase the stimulant effect on the skin and the heat is applied to the surface far more surely by this means than if the water were still. These baths are particularly effective for painful stumps, painful scars, partial paralysis or in fact any condition which lowers the circulation and nutrition of the member. The period of treatment is about twenty minutes and the part, made warm and comfortable, is then ready for massage and manipulation, which could not have been performed without this preparation.

Massage and Passive Movement

Little headway can be expected until the physiological effect of different forms of massage are clearly understood by both the physician and the masseur. Aimless rubbing is useless, and rough manipulation is dangerous, and frequently one form of massage

may be good when another form is bad. Light stroking is especially useful in painful conditions and as a first procedure in a general treatment. It would be used about adherent scars, over effusions, and over surfaces in which the bone is close to the skin as in the scalp. It acts as a nerve sedative and as a mild stimulant to the surface circulation.

More vigorous friction reaches the deeper parts, wakes up the circulation and forces it on mechanically. Consequently its direction is usually the same as that of the venous circulation. In kneading, the skin moves with the hand like a glove, and large muscle masses are compressed and relaxed. Fatigue products are thrown into the circulation and the nutrition improved. This manipulation is specially useful in reaching deep scar tissue and in stretching it. None of these procedures should be followed by persistent pain.

Striking or beating is a surface or deep manipulation and is done in many ways. By it the nerves are stimulated and reflex contraction of organs like the heart and stomach is produced. Vibration is a rapid form of beating, given by a vibrator at a rate varying from five hundred to five thousand strokes to the minute. It is a stimulant to both nerve and circulation and in addition is most useful for stretching scars and tracing up nerve trunks.

Passive movements should be given by a trained operator, rather than by a machine. Their place is in the stretching of scars, increasing the range of stiffened joints and in rehearsing all the movements of joints whose muscles are paralyzed or weakened. They are of value in detecting and preventing beginning contractures.

Passive movements should not always accompany massage and may be contraindicated, as when a scar is incompletely organized. Here they may do great harm by breaking down the walls of vessels in course of formation in the scar and producing bleeding with subsequent further contraction. They should be slow and insistent, rather than quick and jerky. They prevent adhesions from reforming after an operation for fibrous ankylosis, and they can be used without an anæsthetic in breaking down adhesions when they are not too firm. In such cases the joint should be moved through its range once only, and kept at rest between treatments. It should never be worried by repeated and partial movements, but in the choice and extent of treatment, the surgeon must judge each case on its own merits.

Active Movement

Active movements may be free, but as a muscle works better against a certain amount of resistance, apparatus is necessary to measure the amount of work done and the distance the load is raised. Free movements are merely a rehearsal of the motions of which a joint is capable and need not be described in detail, but even if a limb is fixed by a splint, muscles can be twitched by the patient and so receive a certain amount of exercise, without any active movement taking place in the joints involved.

Most appliances for giving exercise are cumberous and expensive, and it has been our endeavour to design machines that would fulfil the following conditions:

1. To isolate the movement and so prevent the mistaken idea of improvement when it is really another group that is doing the work.

2. To record the range of movement, so that both patient and the operator can follow the progress of improvement.

3. To measure the dose of work in terms of the number of contractions and weight raised.

4. To be simple and cheap in construction, so that they can be easily made by a good carpenter, and discarded when no longer required.

With this in mind, crude appliances were designed and put in operation at Heaton Park in 1916, much experimentation has been carried on at Hart House, Toronto, and the Military Hospitals Commission has constructed a standard set at its workshops in Guelph, for use in hospitals throughout Canada.

They consist of the following appliances:

For the Upper Extremities

1. A finger board for stretching contractions and for giving abduction to single fingers.

2. A finger treadmill for voluntary flexion of single fingers against increasing weights.

3. Finger pulleys for flexion and extension of all joints of the finger against increasing weights.

4. Pulleys for thumb adduction and abduction against increasing weights.

5. A wheel for wrist circumduction, a stretching movement.

6. Pulley for wrist adduction and abduction against increasing weights.

7. A roller for wrist flexion and extension, against weights.

8. A handle for pronation and supination, against increasing weights.

9. A triplicate pulley weight with handles at the ground, shoulder height, and above the head, for exercising the elbow and shoulder joints, giving flexion and extension of the elbow as well as—

10. Shoulder rotation.

11. Shoulder adduction and abduction, flexion, and extension.

12. A creeping board for stretching the shoulder joint in abduction.

For the Lower Extremities

1. Inversion and eversion of the ankle, (a) against increasing weights, and (b) by walking on treads inclined inward and outward.

2. Dorsi flexion of the ankle against increasing weights.

3. Rotation of the knee in flexion, against increasing weights.

4. Circumduction of the ankle, a stretching movement.

5. Knee flexion and extension.

6. Hip adduction and abduction.

7. Hip flexion and extension.

(The last three given on the triplicate machine).

8. A combination of thigh flexion, knee flexion, and foot dorsi flexion by means of an inclined ladder.

9. A combination of thigh extension, leg extension, and foot plantar flexion by means of a bicycle trainer.

Each of these exercises is repeated up to the point of fatigue and the improvement is marked on the scale of specially designed protractors, and by measuring the weight lifted and the number of repetitions.

The operator should follow the patient through his entire treatment, beginning with the preparation by electricity, baths, or radiant heat. He should give the massage and passive movements and direct the active movements. When the improvement is sufficiently advanced, he can turn over the patient to the gymnastic instructor who groups him with a small squad for class gymnastic exercises, and to the instructor in vocational training.

Gymnastics

Gymnastics should be considered as part of the treatment in most cases whether the recovery is complete or not, a contracted finger or a stiff knee should not prevent the patient from doing most of the movements in a gymnastic table and the general exercise and discipline contributes to his cure. The two tables of Swedish remedial exercises, designed and already in use for convalescents, are arranged with no jerky or violent movements at first so as to avoid the possibility of injury from overstrain. As the patient improves, he may be given simple dancing steps to music and so progress to tag and other gymnastic games. The formal gymnastic tables are largely for discipline, accuracy, and control and should occupy but a small part of the hour, the rest being given over to games with medicine ball and basket ball, or such sports as handball, bowling or quoits. In this way discipline is combined with treatment and recreation and the man is prevented from forming those habits of idleness that unfit so many hospital patients for civil life after their discharge.

Occupational Therapy

As soon as possible, men should be set at some occupation in which they will use the affected arm or leg, not consciously, but to accomplish some definite task. Driving a nail, pushing a saw, or handling a spade will supplement and soon replace the more accurate but less interesting work of the treatment room. The clumsy fingers become nimble, in typewriting, weaving; splicing or modelling and the practice of these trades must be regarded as important parts of one general and progressive system of treatment.

The success of physical means in the treatment in these conditions depends on well trained operators.

In Canada there are now two schools turning out graduates trained in the use of electricity, hydro-therapy, radiant heat, massage and corrective exercises, muscular and educational, and I trust this will be followed speedily by a course for the medical officers who will be put in charge of this important department of treatment. Such a course should consist of:

1. Orthopædics, to include the use of splints for all orthopædic conditions, the construction of shoes to correct foot deformities, the demonstration of nerve suture and tendon transplantation, the after treatment of stumps and the fitting of artificial limbs.

2. Electricity to include lectures and demonstrations in the use of galvanism, faradism, diathermy, and ionization; instruction in muscle testing.

3. Hydro-therapy to include demonstrations and practice in the giving of the douche and whirlpool bath, and the sedative bath.

4. Thermo-therapy to include demonstrations and practice in the use of the lamp and cabinet bath.

5. Massage to consist of demonstrations and personal parctice in each form of manipulation including passive movement.

6. Reëducation to consist of demonstrations and practice in the use of each of the appliances for reëducation provided by the Military Hospitals Commission.

7. Gymnastics to include practice in going through two tables of Swedish remedial exercises for convalescent soldiers, dancing steps and gymnastic games.

8. Observation and lectures on occupational therapy.

Such a course would prevent medical officers from being put in the false position in which they so often find themselves, of having to direct treatment with which they are not familiar.

THE News Bulletin No. 11 draws attention to the increasing prevalence of lobar pneumonia and the danger of infection in this disease.

THE USE OF EPSOM SALTS, HISTORICALLY CONSIDERED

By Colonel R. D. Rudolf,

Professor of Therapeutics in the University of Toronto

THAT there is nothing new under the sun is a common saying, and never was this truer than in regard to the use of that old medicinal friend, magnesium sulphate. This drug has, of course, been used internally as a mild hydragogue for many generations, but until recently, it would appear from modern literature, its external employment had not been thought of. Thus Dr. N. H. Choksy wrote in *The Lancet* of February 4th, 1911, "that the common and homely drug known as 'Epsom Salts' possessed any other property save the one usually associated with it was scarcely known up to within three years ago. The anæsthetic effects resulting from its subcutaneous application, however, induced Dr. Henry Tucker, of Philadelphia General Hospital, to apply it for the relief of pain in local inflammatory conditions, with rather surprising results. For apart from the relief of pain and discomfort, it was found that it controlled and eventually led to the cure of the imflammatory process. Numerous observations in gonorrhœal epididymitis and orchitis, gonorrhœal rheumatism, acute articular rheumatism, neuritis, etc., gave equally satisfactory results."

And Dr. Tucker himself, in the *Therapeutic Gazette* of April, 1907, and again in that of June, 1908, elaborates this external use of the drug and gives details as to its employment. Thus, a saturated solution should be applied to the inflamed part, 15 to 20 layers of ordinary gauze being constantly kept wet with it. The gauze should not be removed for twenty-four hours and the parts then washed and the dressing reapplied. There is found to be marked bleaching of the surface, which is not followed by any deleterious effects. It causes numbness and tingling in the hands of the attendants, which may last for twenty-four hours.

The external use of magnesium sulphate thus became established and since then has been much used and to my mind bene-

Received for publication October 2nd, 1917.

ficially used in various superficial inflammatory conditions, especially, perhaps, erysipelas. But it can now be shown that this external use of the remedy is only an echo of the very ancient, in fact the most ancient, use of the salt. During the first years after the discovery of these waters they were only used externally, and it remained for the third Lord Dudley North to suggest that this all-healing drug might also be used internally with benefit. As is commonly known, the spring was discovered at Epsom, by a farmer called Henry Wickes, or Wicker, in the dry summer of 1618. This man happened to find on the Epsom Common a small hole containing water. He dug it larger and then brought his thirsty cattle to drink there, but the beasts would have none of it. This led to much talking and further examination of the well, and then someone suggested that it might be a medicinal water, and soon the local people began to use it as such in the bathing of various open sores and painful affections. This was the only use that was made of the well for years, until, indeed, Lord Dudley North, who lived somewhere near, began to take the waters as a medicine. In 1645 he published a book, called "The Forest of Varieties", and in it he claims to have been the first to have made known "the virtues of both the Epsom and the Tonbridge waters to the King's sick subjects, the journey to the German spas being too expensive and inconvenient to sick persons, and great sums of money being thereby carried out of the Kingdom." According to Nehemiah Crew, also, physician and secretary to the Royal Society, who wrote a treatise in 1695 on "*The bitter cathartic salt in the Epsom waters*", which book is in the library of the Royal Society of Medicine, where I had the chance of seeing it, Lord North was the first to take the waters as a medicine. He had been in the habit of visiting the German spas, as he "laboured under a melancholy disposition." He used it with success and regarded it "as medicine sent from Heaven." By 1688, according to Gordon Home in his "Epsom, its History and Surroundings", "it was a common occurrence for doctors to order a visit to Epsom, for in the "Domestic State Papers" of June 29th, in that year, we read: "Chatham Dockyard. John Owen to Pepys. I beg leave of absence for twelve days, being afflicted with ——— and advised to drink Epsom waters." Soon all the fashionable world was flocking to Epsom, and they continued to do so until in 1753 that popular physician, Dr. Richard Russel, introduced sea-bathing. The diversion in this direction was fatal to Epsom. Yet the Epsom well is still there, now surrounded

by fruit trees, and the water still retains its original qualities. But where are the hosts of fashionable and more humble people who used to throng the London road, riding, driving, walking or being carried to the famous well?

A great Canadian military convalescent hospital, with its four thousand patients, is now nearby, and no doubt much "mag. sulph." is used in assisting these poor fellows back to health, but it is a salt made from *dolomite* or *kieserite* that is given, rather than the original waters from the adjacent well. And this is only used internally, unless, indeed, the medical officers have been reading rather recent medical literature and are applying what they, from this, believe to be the new external method, or unless, indeed, they happen to be versed in medical history and hence know that they are only then again employing what was the original method of using this healing solution in the very place where they are now practising their art.

In accordance with an Act passed last August to amend the Newfoundland Prohibition Act, a board of liquor control, consisting of three members has been appointed by the Newfoundland government. The powers of the Board include the supervision of the administration of the Act, the framing of rules and regulations for the purpose of carrying out its provisions, and the limitation of the quantity of intoxicants supplied to any one person.

ON THE MODERN METHODS OF THE TREATMENT OF FRACTURES

By Frank R. England, M.D., F.A.C.S.

Surgeon, Western Hospital, Montreal

THE treatment of fractures by reduction and splints is as old as antiquity. Read any treatise on fractures from the most ancient to the most modern, from Hippocrates to Ambroise Paré to Dupuytren, Malgaigne and Hamilton, and every one of them teaches that movement prevents the formation of callus and hinders bony repair. Based on this conception the principle governing treatment has been to effect reduction and secure immobilization, that is to say, secure good anatomical alignment of the broken limb and maintain it by splints and bandages. It was an easy method of treatment. It took but a short time for the surgeon or the local "bone setter", as the case might be, to "set" the fracture and then there was nothing further to do but to maintain a careless optimism, a watchful waiting for a month or two to see what happened.

Erichsen in his text-book on surgery says, "The treatment of a simple fracture uncomplicated in any way is a very simple business. All that the surgeon has to do is to place the fragments in proper position and in good apposition, and to retain them there, and attend to the general health of the patient on ordinary principles; nature does the rest. In no way can the surgeon accelerate the processes or improve upon them. By meddlesome treatment he may do much to retard and disturb them." But surgery is a progressive science and great have been its advances since Pasteur and Lister opened the door to the aseptic system. In cerebral and abdominal diseases the changes have been revolutionary, as, in fact, they have been in almost every field of practice. So also in the management of broken bones evolutionary changes were bound to come. The methods of mediæval surgery did not satisfy the keen scrutiny of such discerning clinicians as Brandenheuer, Lucas Championnière and Sir Arbuthnot Lane. A critical study of their own cases soon convinced them that the re-

Read before the Montreal Medico-Chirurgical Society, May 18th, 1918.

sults obtained were not satisfactory; on the contrary, a large proportion of the cases treated were marked by deformity and loss of function. It was apparent that the disability was largely due to prolonged fixation with splints and bandages; the nutritional changes, the ischæmia, the atrophy due to pressure, the thickening and stiffness of the neighbouring joints, the exudation into the tendon sheaths, the adhesion of tendons and the matting together of the surrounding soft structures, all these were recognized as being caused by prolonged fixation. In view of these evils Lucas Championnière had the courage to get away from authority, tradition, and routine and to try new methods. He began by lessening the degree of immobility, next he did away with it altogether and introduced the bold practice of methodical therapeutic mobilization, declaring that properly graduated movement instead of being harmful actually favoured the production of new bone.

This is the cornerstone on which his method of treatment is based. He taught that every movement which is not injurious by reason of its amplitude favours repair, but it must be understood that the movement must be measured—dosed so to speak.

The introduction of radiography also did much to add to our knowledge of fractures. It was of immense value in diagnosis, by giving positive information as to the nature of the break, the direction of the line of fracture, the amount of displacement, if any, of the fragments and their relative position. It also demonstrated the difficulty and often the utter impossibility of effecting reduction of the displaced fragments and retaining them in proper position. It was, doubtless, this difficulty of obtaining a good anatomical result which brought about the most modern of all methods, the radical treatment of fractures by open operation. Sir Arbuthnot Lane championed the method with all the enthusiasm and force of his strong personality. The practice naturally, for a time, received much hostile criticism; nevertheless, surgeons from all parts of the world flocked to London to see Lane do his bone plating, as a routine method in the treatment of simple fractures. To-day the practice has become almost universal, and may be seen practised in surgical clinics throughout the world.

With these three methods of treatment in mind and a right understanding of their underlying principles the surgeon must decide how best to deal with any particular case. It is now accepted as an established fact—"that good form and good function generally go together." This conclusion was arrived at by the

Fracture Committee named by the British Medical Association in 1912, after making a careful analysis of over three thousand cases of fractures treated by the operative and the non-operative methods. The report of the committee showed that with a good anatomical result, 90·7 per cent. gave a good functional result; with a moderately good anatomical result; 29·7 per cent. gave a good functional result; with a bad anatomical result, 53·3 per cent. gave a bad functional result. The committee's report concluded as follows: "Although the functional result may be good with an indifferent anatomical result, the most certain way to obtain a good functional result, is to secure a good anatomical result. No method whether non-operative or operative, which does not definitely promise a good anatomical result, should be accepted as a matter of choice."

I presume every practical surgeon, sooner or later with increasing experience, evolves for himself some basis or rule of practice. Personally, I must confess to a growing tendency toward the operative treatment of fractures, and this, notwithstanding my natural inclination to conservative surgery. Several factors seem to favour this line of treatment. In the first place one soon learns that the reduction or "setting of a fracture" where there is much displacement of the fragments is a myth, that it cannot be done even with the patient under an anæsthetic and on a proper table with good assistants to aid in the undertaking. The limb, it is true, may be made to assume a good anatomical position by extension and manipulation and the measurements may be right. In this so-called corrected position the limb may be held by splints or extension or by both; but later when the part is examined and checked by the *x*-rays the displacement will be found to persist either unchanged or not materially improved. When cases do come to operation it is generally found to be a very difficult matter to secure accurate coaptation and retention of the fragments even with an open wound with ends of the bone fully exposed to view. In such cases it is obvious that reduction by any other means would be an utter impossibility. Finally, with practice and a few special instruments the technical part of operative treatment becomes easier to execute and the operator has the satisfaction of knowing that the displacement has been overcome and the bony fragments firmly held in apposition. He soon gains confidence in technique and assurance of asepsis, the *sine qua non* of successful treatment. Whatever may be said for or against any particular treatment of fractures, it must be acknowledged that every method of treatment has some under-

lying principle to commend it in suitable cases. We should therefore familiarize ourselves with these various principles and endeavour to apply them rationally as the indications may appear to demand.

Here I wish to refer again to radiography and the part it plays in determining the management of fractures. A properly taken skiagram is of the greatest value to the surgeon in giving him accurate information regarding bony displacement, the position of the fragments, the involvement of joints, etc.; from such information he frequently decides for or against operative treatment. This is right and proper; nevertheless, the surgeon by deciding in favour of non-operative treatment may bring upon himself much trouble and annoyance. To illustrate, I will cite a case which came under my own observation. A young man, sixteen years of age, received a fracture of the middle third of the tibia. The *x*-rays showed only slight displacement with an angulation of not more than eight degrees. Treatment by splints and massage in due time gave firm bony union with a good functional result, so satisfactory that the patient was able to walk without a limp within eight months from the receipt of injury. On the return of an absent relative a skiagram was obtained of the injured leg. The line of fracture was still clearly shown with slight angulation. Much excitement ensued, "bone specialists" were consulted and operation discussed as a possible means of correcting the slight bowing of the tibia. The unfortunate surgeon was refused his fee and even threatened with a suit for malpractice. Such a situation may confront the surgeon any day. Under these circumstances the problem, which merits our thoughtful consideration, is how can we give our patients the treatment which is best for them, and not have our judgment and practice overruled by shadow pictures in the hands of well meaning, but misguided, friends? On this question I trust there will be some discussion.

In conclusion, I want to say a few words on the operative treatment of simple fractures. In my experience, if internal fixation is to be a success, the fixation must be mechanically efficient. Any method of fixation which leaves a weak and shaky junction is generally a failure. The fragments should be fixed mechanically, so that they can withstand all possible strain that is likely to be put on them. A fractured bone thus firmly and accurately fixed will heal by first intention.

I shall not go into details regarding the numerous devices

which have been employed to secure internal fixation, for with these you are all familiar, but I wish to call your attention to the constriction band introduced by Professor Putti, in 1914, and perfected by Drs. Parham and Martin of New Orleans. It is particularly adapted for the internal fixation of oblique fractures of the long bones. The band is a good mechanical device, easy of application, and when applied restores the contour of the bone and gives firm and adequate security. I have used the band in only three cases, once in a fracture of the lower third of the femur, and twice in fractures of the tibia and fibula, and the results obtained in these cases have been most satisfactory with prompt recovery and early restoration of function.

MR. HORACE L. BRITTAIN, PH.D., has been appointed superintendent of the Toronto General Hospital for a period of one year. Dr. C. K. Clarke retains the position of medical director. Mr. Brittain is the managing director of the Bureau of Municipal Research and is well qualified for the work he has undertaken at the hospital. The enlistment of many of the members of the hospital staff has thrown a heavy burden upon those responsible for the administration and the new arrangement, it is hoped, will relieve them of a great deal of work which does not rightly belong in the province of medicine.

SOME COMMON FOOT CONDITIONS AND THEIR TREATMENT

By J. Appleton Nutter, M.D., F.A.C.S.

Montreal

CONDITIONS in the foot requiring treatment fall roughly into two groups, the first being where the foot is mechanically at fault, the second being due to some infection, most commonly dismissed as "rheumatism" and treated as such by salicylates and their derivatives. A combination of the two, mechanical defect plus infection, is very common and at the same time difficult to cure.

Among mechanical defects, trouble involving the longitudinal or long arch of the foot is the commonest presented for our treatment. This arch runs from front to back of the foot on its inner aspect, its highest point being marked by the navicular or scaphoid bone. Its function is to give an elastic tread to our walk—not to support our weight steadily and continuously. When too much of the body weight is applied to this arch pain results. The pain is due mainly to overstretching certain ligaments, that which supports the head of the astragalus (the inferior calcaneo-navicular) being most often involved.

I have said that pain results from too much of the body weight being applied to this longitudinal arch, but I have not indicated how this overloading of the arch comes about. The body weight may be considered as descending down the shin bone to the foot. If the foot is everted the shin bone will be directly over the inner border of the foot, and so the arch of which we are speaking will receive a great—an improperly great—proportion of the weight. If the foot is neither inverted nor everted the weight will be centered near the middle of the foot, and the outer border will bear much of the weight. This is as it should be, for the outer border of the foot is very strong and perfectly well able to support a great deal of weight.

That our arches are long-suffering is shown by the fact that troubles referable to them constitute by far the greatest number

Read before the Montreal Medico-Chirurgical Society, May 18th, 1917.

of foot complaints. The pain is most commonly referred to the inner aspect of the ankle, and tenderness is generally found over the scaphoid bone. The diagnosis is made by observing—not the height of the arch—but the fact that the foot is turned outwards more than normal, or is pronated. In advanced cases the arch becomes somewhat flattened—termed valgus. In many cases both conditions are present, so that the term pronato-valgus is frequently used. Bear in mind, however, that the pronation is much more significant and important than the valgus.

The commonest error in diagnosis is generally due to lack of observation. A heavy boot will often mask a pronated foot, and the patient is then treated for rheumatism. If there is one thing which it seems to me should be of value, one point to which I feel special attention should be drawn, it is that one should examine feet only when bared and with the patient standing. An examination of the foot with the patient seated or in bed leaves many points in doubt. One must not forget that in a doubtful case it is well to keep the patient standing barefooted for four or five minutes. I have seen an apparently normal looking foot develop well marked pronation in the course of a few minutes of weight bearing.

The next most common error of diagnosis in arch conditions is to overlook the actual presence of an infective process in the foot. The recognition, for example, of gonorrhœal arthritis or of tuberculous disease in an obviously pronated foot is not always easy. A rheumatoid condition may be suspected first of all by pains (actual pains) in other joints, as for example in the fingers. If in addition one finds in the foot swelling, pain and tenderness in regions not commonly affected by the results of pronation, and present to an extent unusual in mechanical disability, one may feel sure of the presence of an infection. Excessive swelling of the foot, particularly in the region of the toes, is likely to be due to rheumatoid disease.

In this connexion I wish respectfully to protest against the habit of inspecting the patient's fingers for Heberden's nodes, and on finding them (which is most common) to treat the patient's feet—all unexamined—for "rheumatism". If I had to consult a physician for suspected arch trouble I should enter his office with my hands in my pockets.

As to bone tuberculosis in the foot, in incipient cases it is impossible to be sure of your diagnosis. A tuberculous focus in or near the ankle almost always causes a pronated condition—usually

rigid by muscle spasm—to develope. If you suspect such a condition by the presence of localized swelling and tenderness at a place not usually attacked in mechanical disability, put the foot at rest for a month or two in plaster-of-Paris until the *x*-rays make the case plain.

Strapping the foot in an inverted position makes a good therapeutic test. It generally helps a pronated foot, and has not much effect on the pain of rheumatoid or tuberculous disease.

Just as we say surgery is divided into two great periods, before and after Lister, so in the so-called arch conditions treatment depends on whether or not the foot is rigid. By rigidity we commonly mean inability to invert the foot—that is, to put into action the tibialis anticus and posticus. If a foot cannot be inverted it means, nine times out of ten, that owing to pain in the foot the peroneal muscles are contracted and cannot be made relax. If this spasmodic contracture of the foot has persisted for some months it will be found that adhesions between various joint surfaces have formed. In treating a rigidly pronated foot one has first of all to overcome the rigidity.

In a general way rigidity, which is practically always combined with eversion, is overcome by forcible inversion and then by retention for a longer or shorter period in an exaggeratedly inverted position. By inverting the foot the body weight is more largely transmitted to the outer and stronger border of the foot, and by so much the arch is freed from its burden. This explains why the so-called "strapping" of the foot gives so much relief. It is not due to any mystic healing imparted by the adhesive bandage—rather is it due to sparing the strain on the weakened arch by putting the weigh elsewhere.

Strapping the foot after it has been forcibly wrenched into an attitude of inversion is the best treatment in mild cases of rigidity. The procedure, which is quite painful, and unpleasant both to patient and doctor, should be repeated every day or every few days until the peroneal spasm is overcome and the foot can be voluntarily inverted. In many cases the painfulness of this manipulation causes it to fail, and here wrenching under an anæsthetic is indicated. Plaster-of-Paris in an inverted position is kept up for six weeks, to be followed by a simple brace remaining on a couple of months. Occasionally we meet with a rebellious case where, in spite of wrenching and plaster, the foot returns to its everted and painful position. Here it is a good plan to resect three-quarters of an inch of both peroneal tendons from back of

the fibula near the ankle. Follow this with plaster in an inverted position for six weeks, and then with a brace to maintain the inversion while the patient walks. Plates are practically never needed in these rigid cases. The result of treatment is very gratifying, as a rule.

While on this subject of rigidity I should like to refer to a class of rigid feet occurring after sprain or fracture, particularly after Pott's fracture. Often after some severe injury to the leg or foot pain persists in the foot for months afterwards. In many cases this persistent pain is due to the fact that the foot has become rigid during its immobilization. This immobilizing is no doubt good, but the sad fact is that the foot, while encouraged to move itself up and down, is in many cases neglected as to its movements to one side and the other. Flexion and extension at the ankle are by no means enough to restore a foot to usefulness—it must have power of inversion and eversion or it will very likely remain chronically painful and tender.

I remember one case of a man with a fractured fibula who, months after the accident, was suing his employers for practically total disability. He was thought to have non-union of the fracture. He certainly *was* badly crippled, but the crippling was due to the fact that his foot was rigidly everted. My evidence was to the effect that in three months' time he should, with proper treatment, be well again, and if I remember aright it took only two months to give him a good foot.

Foot plates have a well defined sphere of usefulness in foot conditions. In my opinion there is nothing to equal the Whitman plate. The foot plate is particularly useful:

1. When speedy relief from pain is essential.

2. When the patient is too lazy or stupid to carry out the various special exercises to strengthen the foot and so do without a support.

3 In case of painful heels, where there is tenderness under the heel. Here a high arched plate relieves the heel of much of its burden.

4. In heavy individuals with feet too small to bear the body weight. This applies also to the feet in pregnancy, where under the weight of a heavy pelvis the feet give way. I do not think plates should be used when the following conditions are present:

1. In mild cases of pronation. Here strapping, raising the inner side of sole and heel, foot exercises and an intoeing gait should be enough.

2. In cases showing rigid or semi-rigid pronation. The peroneal spasm should first be got rid of as already described, and plates are unnecessary.

3. In cases with much swelling of the feet, inflammatory or otherwise.

4. In excessively painful and tender cases.

The Metatarsal Arch

Pain in the anterior or metatarsal arch (called metatarsalgia) is second in importance only to that found in connexion with the longitudinal arch. The pain is referred to the anterior part of the foot, including the toes, and there is tenderness in the metatarso-phalangeal joints. Squeezing the front of the foot laterally causes great pain. As a result of continued pain the toe extensors contract, so that the toes are nearly always kept drawn up in the air. This has the direct result of depressing the metatarsal heads still more, and one walks as it were on bullets.

Metatarsalgia commonly is started by too narrow shoes. Once it has become established, however, it takes more than a change of footwear to cure it.

The commonest type of metatarsalgia shows pain and tenderness in all or nearly all the metatarso-phalangeal joints, with hyperextension of the toes. Compression laterally of the front of the foot is very painful. If the pain is of recent date the toe extensors are not permanently shortened, but only in spasm. If the condition has lasted months or years you will find actual shortening and deformity, the toes flexed and drawn up into the air like hammer-toes.

If the foot shows no signs of active rheumatoid disease the treatment is comparatively simple. Beware, however, of cases where rheumatoid disease has settled in the already damaged foot, and beware still more of cases where there is neurasthenia, or where a lawsuit is pending. If all these conditions coexists the task is not an easy one.

Treatment. The best single method of treatment in metatarsalgia is a bar of leather one quarter of an inch thick and three quarters of an inch broad across the under surface of the sole of the shoe, just back of the metatarsal heads. Strapping the metatarsal arch, with a felt pad to elevate it, often gives great relief. The idea of the pad is similar to that of the leather bar, namely to relieve pressure on the weight-bearing end of the

metatarsal bone. The shoes should, of course, be wide and thick-soled, the latter to prevent inequalities in the pavement from being felt.

Hyperextended toes with permanently shortened cords, should be let down by tenotomizing the extensor tendons. This allows the toes to assume their normal position and has proved of the greatest service in my experience. Hyperextended toes of themselves tend to render the metatarsalgia worse by forcing down the metatarsal heads.

Rheumatoid disease. Apart from baking, massage and restoring the anatomical form to the foot by this small operation, the presence of rheumatoid disease here, as elsewhere, means a search for the cause of the infection. This may be found in the throat, in the various accessory sinuses of the nose, in the intestinal or genito-urinary tract, as also in the teeth and gums. In connexion with the treatment of rheumatoid disease arising from tooth and gum infection I wish to acknowledge my indebtedness to Dr. A. W. Thorton, dean of the Dental Faculty of McGill. Dr. Thornton has helped to investigate scores of cases, and from him I have learnt how essential an *x*-ray examination of the teeth really is. I have little faith in an ordinary examination of the teeth, even by a good dentist. It needs an *x*-ray to reveal forgotten stumps, purulent cavities concealed by bridge-work, and deeply-seated abscesses.

One variety of metatarsalgia goes by the name of Morton of Philadelphia, who described it in 1876. The pain here is practically always referred to the fourth toe, and the tenderness to the fourth metatarso-phalangeal joint. The pain is sharp and agonizing, with increasing intensity, and can usually be made to disappear only by squeezing and manipulating the front of the foot after removing the shoe. The origin of the pain has occasioned some dispute, but it is probably caused by pressure upon the digital nerves by the head of the fourth metatarsal bone. A foot that is the subject of Morton's metatarsalgia will usually show little beyond a flattening of the anterior arch with hyperextension of the toes, especially the fourth. Sometimes there is tenderness in the corresponding metatarso-phalangeal joint.

How are we to treat it? Only too often strapping the metatarsal arch and the use of a bar under the sole of the boot fail to give relief. As a rule tenotomizing the shortened toe extensors and letting down the toes will cure the pain by allowing the fourth metatarsal head to assume its normal position. In the rare cases where this tenotomy fails, resection of the head of the fourth metatarsal is practically certain to give relief.

Shortening of the tendo achillis. In cases of marked shortening no mistake can be made, but it has been my experience that a mild grade of shortening is often overlooked. By a mild grade is meant where the foot can be forcibly brought to a right angle with the leg, but not beyond this. The shortening may be moderate in extent but far-reaching in its effects. A young lady from Quebec was brought to me complaining of pain and tenderness in her great toe joint. It had lasted for many years. She had no pain elsewhere and no trace of rheumatoid disease. I was quite at a loss to account for this until a routine examination revealed a short tendo achillis. When she took a stride forward the strain was largely transmitted to her great toe joint, which she was unable to raise from the floor.

Her tendo achillis was made about an inch longer a few months ago, and she has had no pain since.

In another case a young man consulted me because he walked lame. The limp apparently arose from the knee, and as a consequence this man's knee had been treated most heroically. He had, however, no pain, tenderness nor swelling in the knee, and *x*-rays of it were negative. The cause of his faulty knee action was finally found to be a shortened tendo achillis, which had the effect of throwing his knee backwards at every step. I operated on him a couple of months ago, and he is, I feel sure, to be free of his defect.

In a third case I had a sturdy little boy of ten brought to me for an examination. The complaint made was that he was continually falling and stumbling for no apparent reason. The boy was healthy and active and bright. Here again a routine examination revealed a short tendo achillis on one side. The dropped foot, naturally, was frequently a source of stumbling.

Let me close by noting that a shortened tendo achillis is at times the first and only sign of an oncoming degeneration of the spinal cord with extensive paralysis. I mention this because I know of one case where such a paralysis appeared after the tendo achillis had been lengthened, and the surgeon was given the blame for producing the paralysis. It is well in self-protection to warn the parents in such cases of the possibility of such an outcome.

CYCLIC VOMITING IN RELATION TO ACID INTOXICATION

By Julian Loudon, B.A., M.B., M.R.C.S.

Assistant in Clinical Medicine, University of Toronto; Assistant Physician, St. Michael's Hospital, Toronto

A GREAT amount of literature has been appearing during the past few years on the subject of acidosis in a severe form, called acid intoxication, as the cause of vomiting, fever, headache, dyspnœa, stupor, coma, convulsions, etc. My remarks will apply chiefly to the relation of acid intoxication to cyclic or recurrent vomiting. The term acid intoxication means the presence in the system of large amounts of acetone (CH_3 CO CH_3), diacetic acid (CH_3 CO CH_2 COOH), and beta-oxybutyric acid (CH_3 CHOH CH_2 COOH). Cyclic vomiting is a state in which spells of vomiting recur after certain definite intervals of freedom, which vary in length with different patients.

The chemical effects of the acetone bodies. Acetone itself is said not to be harmful when it accumulates in the tissues; but when it is present diacetic acid and beta-oxybutyric acid almost always accompany it. These two latter bodies, especially beta-oxybutyric acid, are harmful because they not only diminish the alkalinity of the blood, but, by combining with the alkalies, they prevent the conveyance of carbon dioxide to the kidneys and lungs. For example, when beta-oxybutyric acid combines with the ammonia compounds to form salts, it prevents the ammonia radicles from combining with carbon dioxide to form urea. The consequence of this chemical reaction is that carbon dioxide is left in the tissues, and an attempt is then made to excrete it by combining it with the potassium and sodium ions of the blood which carry it to the lungs and expired air according to the following formula:

$$CO_2+Na_2CO_3+H_2O=2NaHCO_3$$

(carried to lungs).

$$2NaHCO_3=Na_2CO_3+H_2O+CO_2$$

(escapes with breath).

Read before the Medical Section of the Ontario Medical Association, Toronto, May 31st, 1917.

Received for publication July 5th, 1917.

When the beta-oxybutyric acid increases still further and has combined with all the available ammonia radicles, so as to prevent the formation of urea, it then combines with the sodium and potassium ions preventing their combination with carbon dioxide to form salts for conveyance to the lungs. In such fashion a great accumulation of carbon dioxide is formed in the tissues and causes the vomiting and other symptoms above mentioned.

The causation of acidosis and acid intoxication. The reason for these acetone bodies appearing in some individuals rather than in others is not clear, and all we can say is that they represent an increased or faulty metabolism of fats. It is not difficult to understand why such bodies may appear in conditions which involve a great destruction of fats, such as fevers, starvation and diabetes mellitus, because in such states there is a more rapid breaking down of fats than in the normal metabolism. In the idiopathic cases with which we are especially concerned it would be reasonable to expect the acidosis to be aggravated or even excited by the feeding of fats or the withdrawal of carbohydrates which lessen the splitting up of fats. It is important to keep this influence of diet in mind when we come to the question of treatment.

Symptoms of acid intoxication. Usually for some hours or even days before vomiting or any other alarming symptom appears the patient may look tired and be fretful and irritable, and the breath may have the peculiar aromatic odour of acetone. The fact of this characteristic odour of the breath appearing so early and the fact that the acetone bodies may be demonstrated in the urine before vomiting occurs indicate that the results of faulty metabolism are responsible for the vomiting and other symptoms, and that the acetone bodies do not appear except as a result of the vomiting as stated by some investigators. When vomiting appears it is usually urgent and uncontrollable. The ordinary contents of the stomach are first vomited, then bile, and at times a little blood. For days nothing given by the mouth may be retained. Sometimes there is diarrhœa with a little blood or mucus in the stools, and this may suggest an intussusception or a volvulus for which an operation may be wrongfully performed. At other times there may be obstinate constipation. The vomiting usually ceases about the third or fourth day of the attack, but may continue for a week or more and when this obtains there is great thirst with sunken eyes and loose inelastic skin resulting from the loss of fluid from the tissues. The temperature is often elevated several degrees. When the vomiting ceases the acetone bodies

usually disappear from the urine within a day or two, and reappear shortly before the next attack, which is likely to recur after an interval of several weeks or months as the case may be. In some cases there is the peculiar phenomenon of hyperpnœa or "air hunger" in which the breathing is deep and laboured, but may not be greatly increased in rate. In other cases there may be convulsions, fainting spells, or coma. According to some writers migrainous attacks may be symptomatic of the same condition. In fatal cases the liver cells have been found to be in a state of fatty degeneration. Necrosis of the renal tubules with hæmorrhages into the glomeruli has also been described.

Tests for acetone and diacetic acid in the urine. There is no good clinical test for beta-oxybutyric acid in the urine and it is usual to test only for acetone and diacetic acid. To test for acetone add an equal amount of urine to a saturated solution of ammonium sulphate in a test tube; then add a few drops of a weak solution of sodium nitroprusside. If acetone be present a deep purple colour appears. To test for diacetic acid add a few drops of a weak solution of liquor ferri perchloridi to some urine and a characteristic Bordeaux red appears. The dirty yellow precipitate is the insoluble phosphate of iron and may be filtered out. This latter test may be positive in patients taking salicylates, but in such cases the red colour does not disappear on boiling as it does with diacetic acid.

Treatment. The chief principle in regard to diet should be the withdrawal of fats and the increase of carbohydrates. During the attack sodium or potassium bicarbonate may be tried by the mouth or rectum in a one in twenty solution with the hope of increasing the alkalinity of the blood and supplying alkali radicles for combination with carbon dioxide. At times a small dose of morphine hypodermically or by the mouth or rectum will be found to be effectual in temporarily controlling the attack. The same proportion of sodium or potassium bicarbonate may also be employed in a 10 per cent. solution of glucose. In urgent cases 75 c.c. to 150 c.c. of a 5 per cent. solution of sodium bicarbonate in normal saline or a 2½ per cent. solution of glucose in normal saline may be given intravenously. When the patient is able to retain any nourishment milk sugar and cereal gruel should first be given and then light diet chiefly in the form of cereals.

The following cases illustrates the importance of making a thorough examination before coming to a conclusion, and also how essential is the application of scientific knowledge to treatment:

The patient, K. M., was seven years of age when she began to have severe vomiting. Previous to this she had been particularly healthy, and was considered to be more robust than her twin sister who had always enjoyed good health. The first vomiting spell commenced on the memorable day of August 4th, 1914, when Great Britain in defence of civilization declared a righteous war upon barbarous Prussianism. At that time the patient was spending her summer holidays in Muskoka with her mother and twin sister. The onset was quite sudden and severe. The vomiting matter first consisted of the ordinary contents of the stomach, but subsequently became green and then black. As the bowels were constipated a soap and water enema was given, but without result. On the next day, August 5th, the child was brought to Toronto, and on August 6th an abdominal section was performed. After the operation was performed the vomiting ceased. It was stated that during the operation a small intussusception had been found and reduced, but in the light of the subsequent history this statement is open to doubt. According to the mother the urine was not examined.

On November 2nd, almost three months after the first attack, another attack exactly similar to the first developed. On the next day an operation was performed, and the appendix was removed after which vomiting ceased.

A third spell commenced on February 28th, 1915, almost four months after the second one, and on March 1st another abdominal section was performed without finding any obstruction of any kind. Immediately after this the temperature rose to 103° and the pulse and respiration rates became accelerated. It was thought at this time that pneumonia was developing, but all the symptoms subsided within a couple of days. About two weeks later an attack of so-called broncho-pneumonia developed, but subsided inside of a week. At this time, for some unknown reason, the child was ordered a carbohydrate-free diet. Cane sugar was replaced by saccharin. Cream, butter, and other fats were allowed without limitation. Gluten bread and Roman meal porridge composed the remainder of the diet. It is instructive to note that the attacks now became more frequent and severe.

The fourth spell began on May 24th, less than three months after the third. At this time a laparotomy was again suggested, but the parents refused to give consent. On the third day the vomiting suddenly ceased, but it was several days before the patient regained her usual strength.

On August 3rd, a little over two months after the fourth attack the fifth spell commenced, and after continuing with frequent and violent vomiting suddenly ceased on the fourth day.

The sixth spell made its appearance on October 2nd, two months after the previous one and had the same character with the exception that it was even more severe. This attack also ceased abruptly on the fourth day.

The seventh spell began on November 28th, less than two months after the previous one and while the duration was about the same as the previous two the attack was the most alarming of all. A record of the number of times the child vomited was not kept, but it was stated that it was not uncommon for her to have five or six spells within an hour.

The parents now decided to take the child to a well-known American medical centre before the onset of the next attack which they expected about the end of January, 1916; but before they had completed their plans the child developed an acute attack of respiratory trouble on December 26th, 1915. It was at this time that I was asked to examine the child by a young medical practitioner who was a friend of the family. On examination the temperature was found to be 105°. The pulse and respiration rates were much increased in frequency. The breath sounds were very harsh, but were similar over the whole chest, and no adventitious sounds were present. Just previous to my examination there had been a slight vomiting attack. Being rather puzzled by the lack of physical signs, I was careful to make a detailed history and to examine the urine which was found to be loaded with acetone and diacetic acid. After about a week when all the symptoms had subsided, I ordered a complete reversal of the ingredients in the diet. The carbohydrates were permitted in abundance and the fats were prohibited. Proteins were allowed in small amounts. In a week or so after this change in diet the urine was entirely free of acetone and diacetic acid. *X*-ray photographs showed that there was no intestinal obstruction and that the barium meal moved onwards at a normal rate.

After this all was well for six months. On June 27th, 1916, while I was in Quebec on military duty, a telephone message was received saying that another attack had developed. Dr. G. W. Ross was summoned, and after a preliminary investigation he ordered a fluoroscopic examination of the gastrointestinal tract and a complete examination of the urine. According to his report there was reverse peristalsis in the duodenum and an abundance

of acetone and diacetic acid in the urine. Enemata containing 15 minims of the tincture of opium were ordered as well as sodium bicarbonate by the mouth. In three or four days, when this attack had ceased the diet which I had previously prescribed was continued. On subsequently questioning the mother, no marked relaxation in the prescribed regimen could be discovered.

After the belated eighth attack all went well until September 8th, when a mild attack lasting about thirty-six hours developed. During this time vomiting occurred four or five times, and the urine contained acetone and diacetic acid. Since then the child has had no trouble of any kind and to-day is apparently in perfect health.

A day or so before the attacks the child usually showed a lack of the desire to play, and a whiteness was observed about the mouth and nose contrasting with the redness of the lips. A "sweetish" odour was noticed on the breath before and during the attacks. The appetite was always good and was not altered before the attacks. During every attack the temperature was elevated to 102° to 103°. Between the attacks acetone and diacetic acid were never found although frequent examinations were made. One important lesson to learn from this case is that no patient should be operated upon without first having an examination of the urine for sugar, albumen and acetone.

THE annual meeting of the Board of Governors of the Ross Memorial Hospital at Lindsay was held on November 1st. During the past year an *x*-ray plant has been installed in the hospital through the generosity of Mr. J. K. L. Ross. The number of patients treated in the institution during the year ending September 30th, 1917, was five hundred and sixty-eight, the average daily cost of maintenance being $1.81 per patient.

FOCI OF INFECTION IN THE TONSILS

By J. E. Hett, M.D.

Kitchener, Ont.

FOR more than a quarter of a century it was well known that a relationship existed between tonsillitis and rheumatism. At that time we were led to believe that the tonsillar trouble was caused by the rheumatism and the salicylates were frequently prescribed for tonsillitis and quinsey. The salicylates clinically gave good results in many cases, not on the tonsils, but undoubtedly upon the rheumatic trouble which would or did develop following the acute or subacute tonsillar condition. The profession, however, erred in putting the cart before the horse, for now we look upon the tonsillar trouble not as the effect of the rheumatism, but *vice versa*.

During the past six years considerable attention has been paid to the tonsils and a wave of opinion has been passing through the minds of the profession and the laity which no doubt will go to ridiculous extremes. It will be impossible in the short time here allotted for papers to go very deeply into the details of this great subject, or to present many arguments pro and con upon tonsillectomy both in children and in adults, so that it can be referred to but briefly.

It should be stated clearly that the indiscriminate removal of tonsils without sufficient symptoms should be avoided. The function of the tonsil is that of protection to the respiratory and digestive tracts in early childhood. In children it is only when the tonsil becomes abnormal in its size and causes obstruction to breathing that it should be removed. In those stages we have not a breaking down and a diseased condition of the tonsil as we find in later years, and whilst it is true that at times we frequently see acute tonsillitis in children with hypertrophied tonsils, I have not been convinced that these large growths should be completely enucleated when by the simple operation of tonsillotomy the desired results are usually obtained. Our literature is beginning to show the bad effects and mortality of tonsillectomy under

Read at the forty-eighth annual meeting of the Canadian Medical Association, June 13th, 1917.

anæsthesia, especially in inexperienced hands and that it is necessary to inform both the profession and the public that tonsillectomy is not a minor operation, but a major operation attended with risks.

Dr. Morris Manges reported six cases of pulmonary abscesses following tonsillectomy at the Mount Sinai Hospital, New York, in six months. Bassini reported nineteen cases of pulmonary complications after tonsillectomy and adenoidectomy. The pulmonary lesions being two cases of fœtid bronchitis, seven of bronchopneumonia, five of lobar pneumonia, three of lobar pneumonia and gangrene, one of purulent pleurisy and one of abscess of the mediastinum.

All of these were operated under a general anæsthetic. There is no doubt, and every reason to believe, that were the number of cases of fatality from hæmorrhage and lung complications known, "fools would not so easily rush in where the wise fear to tread."

After puberty and especially after adolescence the tonsils diminish in size and from this time on degenerative changes take place in the crypts, which become inflamed over and over again. The pockets become filled with various forms of infectious germs, particles of food may at times find their way into the pockets, especially after some of the crypts have broken down, and we simply have nests as it were of caseous material loaded with foul smelling particles which produce infection of the general system.

It is very common to find patients complaining of headache with more or less sore throat which lasts for a day or two and then passes over. After a few weeks or a month the same condition presents itself and the patient experiences the same trouble. At times the interval may be longer.

In a large number of cases the pain in the throat is very little and many cases have I found where the patient simply complained of the headache or backache and not of the throat. Close examination usually revealed the source of the complaint and infection.

In a large number of cases, however, the crypts are not seen to be infected, but with a good examination one is often surprised at the accumulation of cheesy, foul smelling products of decomposition that can be found especially at the upper angle of the tonsil hidden by the folds between the posterior and anterior pillars which can be expressed with the tongue well depressed and good pressure brought against the anterior pillar. When one sees the large accumulation it is generally easy to understand that infection must take place, and that patients must suffer with various disturbances in the system.

The conditions found due to systemic infections are numerous: arthritis, myositis, cervical adenitis, anæmia, thyroiditis, gastritis, and indigestion, tuberculosis, general malaise, etc. Arthritis is very common and it is surprising what relief is afforded at times when the source of infection in the tonsil is removed by enucleation, as illustrated by the following case:

Mrs. B., aged fifty-two, very pale and anæmic, suffered with the left knee, which was very much swollen for a year and a half. After seeking relief at various places she only became worse and could hardly step on her foot. Three months after the tonsils were enucleated she seemed a different person. She was able to walk pretty well, colour was restored to her face and she added a considerable amount to her weight.

It certainly is surprising what results will be obtained, especially in the cases of recurrent arthritis.

During the past six years I found that every case of cervical adenitis was due to infected tonsils. I believe that over 95 per cent. of cases are due to this infection. Before the technique of tonsillectomy was known, I operated on cervical adenitis and, of course, in some cases had recurrence. Later I succeeded in removing the adenitis, not by operation on the gland in the neck, but by enucleation of the tonsils. In cases when the adenitis was not of long standing it was surprising to see how the enlargement of the gland disappeared. Of course in old fibrous cases, or where suppuration has set in, the glands must be removed.

From observation of a number of cases of tuberculosis I found that the tonsils were in a diseased condition, and although I did not have an opportunity to examine the tonsils before the tuberculosis was discovered it seems to me that in all probability the tonsils were the breeding places of the bacilli of tuberculosis before general infection set in.

In quite a number of cases of anæmia and general malaise diseased tonsils are found—such has been my experience—and upon their removal the anæmia disappears. The following case illustrates this very clearly.

Mrs. F., aged thirty-two, had been in poor health for about three years during which time her weight decreased from one hundred and forty-five to ninety-five pounds. She sought advice and was under treatment by various physicians including a dilatation and currettment, although she had no symptoms of uterine disturbances. She simply grew from bad to worse, was very pale and anæmic.

Upon examination I found the tonsillar crypts in bad condition, and at the operation a large pocket of pus was located.

In a few months she had almost regained her original weight and soon returned to her normal condition.

The effects of infection vary a great deal, depending upon the nature and virulence of the microörganisms, the numbers present, the length of time, the absorption, and the relative immunity of the individual.

Whilst infection of the tonsils causes so many troubles one must remember that infection may be due to ulcerated teeth, pyemia, ethmoid and sinus disease and one must ever be on the alert to find where the infection exists. I have found it in the teeth and ethmoids as well as in the tonsils in the same patient.

The method which I resort to in the operation is by local anæsthesia entirely.

During the past six years the technique has been considerably improved. The tonsils are first swabbed with a 5 per cent. solution of cocaine and the surrounding tissue well injected with half of 1 per cent. of novocain and adrenalin. Great care must be exercised not to injure any of the small muscles and one must keep in close touch with the capsule at every part of the tonsils. Great care must be taken also not to remove too much of the membrane, as it is very essential in the healing process so as to cause as little contraction as possible.

In six years of enucleation I have had two cases of annoying hæmorrhage due to improper technique in the earlier operations, but by exercising greater care later I have practically had none.

Great differences in tonsils exists as everyone knows, and I have found that some small tonsils are often more difficult to enucleate than large ones and that experience and gentleness go a long way under local anæsthesia.

Many patients will say, "I can't stand anything in my throat and the slightest irritation produces gagging or vomiting." Everyone knows the great differences which exist in individuals and one must exercise considerable mental tact with firmness and gentleness to hold the confidence and keep the patient in proper condition during the operation.

As regards after-treatment a simple antiseptic gargle of weak solution of glyco-thymoline in normal saline is given, and usually I pay no further attention, believing that if the enucleation is properly done an excellent result can be expected.

NOTES ON THE TREATMENT OF BACILLARY DYSENTERY

By A. A. Fletcher, *Captain, C.A.M.C.*

Canadian General Hospital

THE following observations were made during the outbreak of dysentery which occurred among the Salonica Forces in the summer of 1916. The hospital was situated at the base and owing to difficulties in transportation, the cases were seldom seen for sometime after the onset. Yet while most of them had been sick for ten days or more, they were still having ten to thirty stools a day, consisting largely of the thick blood-stained mucus typical of the more advanced stages of the disease. The large majority were bacillary in origin and these notes were made upon a series of ninety-eight bacillary cases, in which I carried out a fairly constant routine of treatment.

A laboratory diagnosis was always made; seventy-eight were of the Shiga type and most of the other twenty belonged to the Flexner group. In the fall the dysenteries were nearly all infected with the Flexner organism, these cases were milder throughout and required very little treatment; they are not included in the above ninety-eight, which represents a series admitted between June 21st and October 10th.

The general treatment followed the lines usually laid down. An initial purge of castor oil was administered if it had not already been given. Sometimes an old solid stool would be passed by a patient, who for several days had been having stools of blood and mucus only. The oil was followed by repeated doses of saline, preferably soda sulphate, four times a day, for the first two or three days and then reduced as the stools became more fæcal. Dram doses were continued for a week or ten days if mucus was still present in any considerable amounts.

The diet first consisted entirely of various gruels, rice water, barley water, tea, and albumen water, to which lactose up to 4 ounces a day was added if the patient required further nourishment. The lactose was well tolerated and did not produce any

Received for publication July 7th, 1917.

nausea nor discomfort. As the dysentery became less severe, malted milk, jellies, eggs, and biscuits were added, but bread and other solid foods were not given until the diarrhœa had entirely subsided. Milk soured with *B. bulgaricus* was tried in many cases and with good success. Such a restricted diet seemed to be especially indicated during the summer months, while in the cooler weather a more liberal diet could be allowed without fear of relapse. Fluids were given freely by mouth at all times. In the more toxic cases 20 ounces of saline was injected intravenously once or twice a day, and this was done, if possible, even before any signs of dehydration had developed. Colonic lavage by means of small saline enemata gave a good deal of relief.

The polyvalent antidysenteric serum prepared by the Lister Institute was given to all of the ninety-eight patients. With the small doses often recommended, the results were not so well marked as with larger doses. Even in the lighter cases 60 c.c. would be given in the first twenty-four hours and in the worse cases as much as 80 c.c. were injected twice in the first day. As the response was more definite and less delayed when the injection was made intravenously, this method was almost always followed. As a rule in severe cases 80–100 c.c. were given the first day in a single or divided dose, 60 c.c. on the second and if thought necessary another 60 c.c. on the third. Further administration did not seem to have any influence on the course of the disease even when the blood and mucus were still present in the stool; this in itself emphasized the importance of a large initial dose. As has been pointed out by other observers, the important factor in the use of antidysenteric serum is early treatment and since in Salonica almost all the severe dysentery was bacillary, it was often found advisable to give the first dose without waiting for the bacteriological diagnosis.

The results bore out this conclusion. Twelve of the ninety-eight cases received a large dose of serum within four days of the onset. In seven of the twelve, the diarrhœa and the passage of blood had stopped and the mucus had practically disappeared from the stool six days after beginning the serum treatment, and of the seven, four had cleared up in three days. Thirteen received their first dose on the fifth, sixth, or seventh day, and of these five were similarly relieved in six days. In these few cases the effect of the serum was striking enough. The frequency of the stool decreased; the pain, the tenesmus and the rigidity of the abdomen was relieved often within twelve or twenty-four hours, the fever dropped to normal and the general condition of the patient

was much improved. Convalescence, usually so tedious, was cut down to a comparatively short period. The remaining cases were tending towards chronicity when admitted, although the symptoms were still acute. After the disease had run a course of seven days the effect of the serum was slight, producing some temporary relief, but not shortening convalescence. After ten days the serum did not seem to influence the further progress of the disease in any way.

A few patients gave a history of previous attack and while in these the serum relieved the pain, the tenesmus and the toxic symptoms to a certain degree, it did not cut short the duration of the sickness.

During the summer the few Flexner dysenteries were often mild and cleared up well without serum. The severe ones, which received serum and are included in the series, did not react as favourably to serum treatment as those infected with the Shiga bacillus. For the laboratory reports I am indebted to Captain Duncan Graham.

THE twentieth annual meeting of the Board of Trustees of of the Royal Victoria Hospital at Barrie took place on October 31st. During the year five hundred and seventy patients were treated.

Case Reports

PRIMARY ASTHMA IN A PREGNANT MULTIPARA

By W. G. Hepworth

Steveston, B.C.

I CONSIDER the following case of interest. A Japanese woman, age thirty-five, consulted me in July, 1915. She was six months pregnant; her temperature was 100°, pulse 80, and she had a cough. No previous history of any sickness; other pregnancies were always normal.

Physical examination showed râles scattered all over the chest, in fact a mild bronchitis. I advised her to stay in the hospital (the Japanese have a hospital of their own here), but she refused and went back home across the Fraser River. I gave her an ordinary stimulating expectorant. I believe she went out fishing with her husband; three weeks later she came back unimproved, and agreed to stay in the hospital.

Her condition then was: Temperature 99½°, pulse 100, respirations 25, then for one month her condition gradually got worse, her temperature never went over 99½°, and was generally normal, but her pulse got weak and fast, respirations increased, she could not lie down in bed, had to be propped up all the time, and only when she had a hypodermic of morphine or morphine and hyoscine did she get some relief. Her case presented a typical case of pulmonary asthma, but it was continuous; there was only one attack and it lasted about a month. Several remedies were tried, as the iodides and bromides, but not adrenalin. She did not respond to any medical treatment. Her urine was periodically examined with negative results. I explained to her husband that I thought after the baby was born she would soon get well, but her case got so desperate something had to be done. I advised bringing on premature labour. Dr. Patterson, of Vancouver, saw the case with me in consultation. Her condition then was: Temperature 99½°, pulse 135, râles all over the chest, marked dyspnœa. Dr.

Read at the forty-eighth annual meeting of the Canadian Medical Association, Montreal, June 15th, 1917.

Patterson remarked that he had never seen a case like it, and as all the usual asthmatic remedies had been tried without effect he acquiesced in my decision of bringing on premature labour. The next morning I put her on the operating table and introduced two hollow rubber catheters into the uterus; one I blocked with sterile cotton, the other I overlooked and through it three or four ounces of fluid flowed out. I blocked it and packed the vagina, and she was put to bed. Almost immediately her symptoms improved, the catheters were left in situ for forty-eight hours without producing any pains. Her condition was so improved that I remember remarking pains would almost be certain to come on, but if not, I would not do anything more to bring them on. However, on the fourth day pains came on and she gave birth to a living child weighing less than five pounds. The baby developed an ischio rectal abscess when seven days old and was terribly jaundiced; I did not think he could possibly live, but at six months of age he was a fine robust baby. The mother has never had a day's sickness since.

I have no other comments to make on the case, except to emphasize the fact that her condition improved so remarkably before the uterus was empty and only three or four ounces of fluid drained out; I also was rather surprised that a soft catheter would puncture the amniotic sac as undoubtedly it must have done.

THE Canadian hospitals which were removed recently from the dangerous areas of Ramsgate and Broadstairs, England, have been established at Buxton, Derbyshire, where several large hotels have been taken over by the Canadian authorities for this purpose. The town of Buxton, well known for its mineral waters, lies in the heart of the Peak district in the midlands of England, and its climate is healthy and invigorating.

DR. CHARLES J. O. HASTINGS, medical officer of health at Toronto, has been elected president of the American Public Health Association.

Editorial

THE PHYSICAL REËDUCATION OF DISABLED SOLDIERS

THE recommendations made upon this subject by Major R. Tait McKenzie, R.A.M.C., while on active service overseas, may be said to have revolutionized the handling of the convalescent British Army. The principles upon which his work at Heaton Park, England, was conducted, and the remarkably successful results he achieved in it, may be gathered from a perusal of the paper by him published in this issue. This work attracted very wide attention and numerous editorials appeared upon it in the leading British dailies. As one instance of the practical results he obtained may be mentioned the fact that of two thousand men who had been already discharged from the Service in 1916 as physically unfit, over one half have been sent back to the fighting line. The class of men concerned are those who, after passing through the ordinary army hospitals, need special treatment, along the lines described in Major McKenzie's article, to bring them back to health.

Recognition of Major McKenzie's work by the Canadian Government together with observation of the success achieved here in Canada by workers in the Psychological Laboratory of the University of Toronto, led the Military Hospitals Commission to undertake the establishment here of extensive reëducation facilities for returned disabled soldiers. Major McKenzie was called in to make a survey of the Canadian Military Convalescent Hospitals, and has recommended methods by which standardization is being achieved and the work so broadened in scope, that hospitals from Halifax to Victoria will soon have workers and equipment.

In this connexion the valuable work of Dr. Edward

Bott, of the University of Toronto, has been recognized and the results applied by the Commission. He used a number of patients at the Military Orthopædic Hospital, Toronto, as laboratory material, and briefly outlines the general principles underlying physical reëducation in the *University of Toronto Monthly* as "the placing within the patient's reach the proper apparatus, assistance and encouragement for practising such physical movements or mental processes as may have been interfered with or have entirely disappeared, through injury or shock. Individual attention is the keynote throughout, each case being a study in itself."

In the experimental stage, following the plan of this Laboratory, an individual instructor gives his attention closely to each case and usually has to devise and construct a piece of apparatus by means of which the patient practises the particular movement or process impaired. It is a feature of each apparatus that a device is attached thereto whereby the patient may measure his accomplishment. Records are kept, and observation of the progress from day to day has a most encouraging effect upon the patient in bringing to the task his utmost concentrated effort. The overcoming of depression, by this means, is held to be a most important factor.

Last spring Lieutenant-Colonel Vincent Massey, one of the trustees of the Massey Estate, from whose funds the million dollar gymnasium and social centre building was erected on the University of Toronto campus, directed that as much of this building (Hart House) as could be used by the Military Hospitals Commission in expanding the scope of the reëducational work, should be made available for that purpose. The Commission resolved to make Hart House a training centre for workers, although active reëducation treatment is also being given to about sixty patients from the Orthopædic Hospital all the time. A school for masseurs and masseuses has been opened at Hart House, massage

being an important corollary, and in accordance with Major McKenzie's report, arrangements are being made for the training of medical officers in reëducation methods. Over a dozen professional workers and instructors are now employed at this place, and between sixty and eighty pieces of apparatus, some of them ordinary gymnasium equipment, are in use. Under the standard methods now being evolved, there will be a close coördination of reëducation, massage, hydro-therapy, electro-therapy, mechano-therapy and physiotherapy. The manufacture of standard equipment as devised by the Hart House workers and approved by Major McKenzie is being arranged.

In all recent hospitals, planned by the Military Hospitals Commission, provision has been made for the adequate accommodation of facilities for carrying on this work.

Public confusion on the subject of reëducation has arisen, to a limited extent, through the use of the term as an abbreviation of vocational reëducation, which has been carried on in this country for some time. Soldiers disabled in such manner that they are unable to return to their former occupations are being reëducated in new trades. About ten per cent. of the convalescent soldiers passing through the hands of the Commission have required vocational reeducation.

VOCATIONAL REËDUCATION OF RETURNED SOLDIERS

PROBABLY the most important duty undertaken by the Military Hospitals Commission, now that the care of the returned sick and wounded has been taken over by the Army Medical Corps, is the provision of training for new occupations, of men, who, because of disability incurred on, or aggravated by, service, are unable to return to their former occupations. An interesting account of the work of the Commission in this connexion comes to us from an authentic source.

A man who, on account of his condition resulting from service, appears likely to be unable to go back to the work he did before enlistment, is examined by a Disabled Soldiers Training Board. This Board takes into consideration everything likely to help in a good choice of new occupation for a disabled man. It considers the man's own wishes, previous education, training and experience, his remaining ability and power, the best method of training, and the chances of permanent employment at fair wages after a man's training for his new job is complete. Recommendations are made by the Board in the light of all the information obtainable, and if approved by the Commission, the disabled man enters upon his course. The Board includes a medical man, a vocational officer and a man familiar with industrial and commercial conditions.

Very often the training commences during a man's period of convalescent treatment, during which, of course, he is still upon military pay and allowances. But if an approved course of training has to be continued after a man's military discharge, he comes under a special scale of payments for himself and his dependents. These payments vary according to the number of dependents and include pocket money of $8.00 per month and subsistence allowance of $1.00 per day for the man. To enable a man to get his footing after his training is finished, an extra month's payment is given to every man who completes his course satisfactorily.

The policy of the Commission is to train a man, as far as possible, for some new work in which his previous experience will be valuable. For one thing, very few adults can make a success of an entirely new occupation in competition with others who may have spent their whole life at it. If, however, a man is obliged to learn a new trade, no effort is spared to make him efficient and able to hold his own in the days to come.

Training in upwards of sixty different occupations

is being given to disabled men in Canada. There are forty centres and sub-centres where training is provided by the Commission. Some men are also being trained in industrial shops and the coöperation of the C.M.A. has been enlisted to train a large number in this way under actual shop conditions, rather than in school shops; although, if necessary to do so, the Commission will supplement, by special classes, the shop training.

Fortunately, only a comparatively small number of men will require to be trained for new occupations, but the Commission has not confined its efforts to these men. Every disabled man who has to undergo treatment in a Convalescent hospital in Canada, is given an opportunity to take some training for self-improvement while he is a patient. Classes in various subjects are provided in or near all hospitals. A man may brush up his general education; study for the Civil Service; or learn bookkeeping, typewriting, shorthand, telegraphy, etc., at most of the centres. If these things do not appeal to him, there are drafting classes where a mechanic can fit himself for a better job; woodworking shops where a man can learn to become a handy man; automobile shops where a man can learn the care and operation of a car; shoe repairing shops where this very useful art can be acquired in a few weeks; machine and metal shops, etc., etc. Where there is ground available gardening and poultry work are also taken up. Many men have been enabled by this training to carry on successfully a back-yard garden and poultry run after their return to civil life. Many others have been able to better their positions because they have taken full advantage of the opportunities for improvement provided in some of the classes carried on during convalescence.

The Commission spares no pains to obtain first class men for this work and a large number of the instructors are men who have seen service in this war and are therefore able to understand the disabled man's feelings and afford him every possible help.

The view formulated by the Military Hospitals Commission as its profound belief must be seconded by every true Canadian. "Pensions alone, however generous, are not sufficient to pay the nation's debt and must be supplemented by sympathetic and efficient aid to enable the shattered to help themselves, to become once more conscious of and able to participate in the true joy of living, which comes only from useful and satisfying work."

GERMAN DRUGS AND MEDICINAL AGENTS AND THE CANADIAN MARKET

THE war has given Canada an opportunity to take such action as will prevent in future the exploitation of our markets by the farseeing but unscrupulous and unethical manufacturers and agents of German patent and proprietary drugs and medicines. Now is the time for the medical profession, both individually and through their various organizations and the press, to urge upon the government the necessity for instituting measures to protect the public and prevent a recurrence of abuses that obtained before the war. While medicine owes to German chemists many preparations of undoubted value, yet the debt is much less than their manufacturing houses and subsidized press would have us believe. Instead of the hardship which many foresaw at the beginning of the war from the cutting off of German drugs, most physicians will agree that the enforced return to pharmacopœal preparations has been of distinct benefit both to the medical profession and the public. In only a few instances has there been any real hardship and these will be more than counterbalanced by the successful efforts being made by manufacturers in Allied countries to meet future contingencies and the breaking for all time of German domination in drugs and chemicals.

The wide and indiscriminate use of German coal-tar products, sold directly to the public under catchy trade

names, was a distinct menace to the health of the people and undoubtedly the cause of many fatalities. We refer especially to remedies sold for the relief of influenza, colds, headaches and insomnia—many of them dangerous cardiac depressants and in their continued use, capable of producing hæmolysis, anæmia and systemic disease.

Many German patent and proprietary medicines were sold in Canada under restrictions much less severe than obtained in the fatherland. Common drugs or mixtures were put up in fancy packages, under fancy names and sold at exorbitant prices. The prescribing of these by medical men, too indifferent or indolent to call for the same under their proper official names, aided and abetted the sale of the product of the farsighted manufacturer and assisted in familiarizing the public with their fancy names, so that they might later be purchased directly from the druggist without reference to the physician. The cloven hoof of *Kultur* is clearly in evidence, as one might anticipate, but what of members of our own profession who were so readily duped?

Unfortunately in providing substitutes for these German remedies, our own manufacturers are too frequently coining similar fancy names, and at times even copying the form of package in which the product was marketed. Imitation is surely the sincerest flattery, which the dignity and self-respect of our manufacturers should counsel them to avoid. One overlyshrewd Canadian manufacturer, before the war, coined a German name which he bracketed after the fancy name of his preparation, and notwithstanding subsequent events, he still appears to think it good business to conjure with the Teutonic talisman.

It is considered a breach of our system of ethics for physicians to prescribe patented remedies, yet these are often recommended by German authors in their text-books and have frequently been copied into our own. Such recognition by our profession of a dual system of ethics, manifestly to the advantage of German manufacturers, should never again be permitted.

The Canadian Proprietary and Patent Medicines Act is up for revision by the Dominion Parliament, and various Medical Societies have been asked to make representation in regard to proposed changes. This opportunity should not be neglected. The whole matter should be considered in a comprehensive and thorough manner in keeping with the interests and for the protection of the public.

The sale of dangerous products, except under prescription, should be prohibited; fancy names for common pharmacopœal preparations should not be permitted; a dual system of ethics should not be countenanced by the medical profession; exorbitant prices should be controlled, and in no case should the restrictions as to the sale of drugs be less stringent than obtains in the country of their origin.

In reply to a communication from the Academy of Medicine, Toronto, to the Patent Office at Ottawa, it was stated that "there has been no general suspension of patents granted to alien enemies, or suspension of any of the terms and conditions of the Patent Act in respect to such patents, but very broad powers have been given to the Commissioner of Patents under the Orders and Regulations respecting patents of invention, made and established under 'The War Measures Act 1914' to deal with specific cases." It is also stated that "three licenses have been granted. The first on November 28th, 1914, to the Synthetic Drug Company of Toronto for the manufacture of Salvarsan, the second on the same date to Dr. Archambault of Montreal for the manufacture of the same material, and the third, on July 12th, 1916, to the Vancouver Creosoting Company, Limited, for impregnation of wood or other porous materials. Four patents are involved in the first two licenses, and two in the latter license." Will the failure to denounce these patents facilitate the resumption of the old practices once the war is over? It is the duty of the authorities to shed some light on this important matter, and of the medical profession and loyal citizens generally to feel assured that their rights are being safeguarded. At present we have no such assurance.

THE CONNAUGHT LABORATORIES

THE Connaught Laboratories and the fifty acre farm which Colonel Albert Gooderham has so generously provided in order that research in Preventive Medicine and the preparation of serums and vaccines may be carried on, were formally presented to the University of Toronto by Colonel Gooderham on October 25th; and at the same time officially opened by His Excellency the Governor General.

The occasion was an unusual one and was especially significant in that the establishment of the first research foundation in Preventive Medicine was announced by Sir William Hearst. On behalf of the Ontario Government the Premier stated that seventy-five thousand dollars was to be voted at the next session of the legislature to endow research in Preventive Medicine in the new laboratories, and that the income from this fund would be devoted entirely to research, since the laboratories themselves were self-supporting. It was also announced that a sum of approximately twenty-five thousand dollars from another source was available and that the income derived from this, too, would be used for the same purpose. Thus the foundation at the outset amounts to about one hundred thousand dollars.

Research work will be undertaken to endeavour to provide means whereby the incidence of, and the mortality from, communicable diseases, may be lessened. The work at present being done on similar foundations at the Pasteur Institute in Paris, the Lister Institute in London, and the Rockefeller Institute in New York will serve as a model.

The opening of the laboratories was a very simple ceremony. The presentation speech by Colonel Gooderham, acceptance on behalf of the University by Sir Edmund Walker, the speech of His Excellency declaring the laboratories open, the important announcement of Sir William

Hearst, and a word from President Falconer constituted the programme of the formal part of the opening. Subsequently a moving-picture film was shown to illustrate phases of the work carried on in the laboratories; this was followed by a tour of inspection of the buildings where the various products of the department were shown, and finally tea was served. Adequate transportation and other facilities were provided. The guests included, in addition to those already mentioned, His Honour the Lieutenant Governor, members of the Provincial Government, the Board of Governors, the Bishop of Toronto, representatives of neighbouring Universities, representatives also of various interested governmental departments, both Federal and Provincial, members of the medical profession, and of the staff of the University, and friends generally of the new Laboratories. In the evening, in Convocation Hall, before a very distinguished gathering, Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, New York, delivered an extremely interesting and able lecture on the War Activities of the Rockefeller Institute. Dr. Flexner pointed out some of the important contributions to science which members of the Institute have made and are making, having especially in mind those of particular value in war-work in the saving of lives and in the minimizing of resultant disabilities. The University was extremely fortunate in having Dr. Flexner on this occasion as a lecturer. A very hearty vote of thanks to the speaker of the evening was moved by Dr. C. K. Clarke and seconded by Major J. G. Fitzgerald.

THE opening of the new sanatorium at Fort Qu'Appelle in the province of Saskatchewan supplies a long felt want in that province. Patients suffering from tuberculosis in the past have been obliged to go to the Ninette Sanatorium at Winnipeg or the Tranquille institution in the province of British Columbia, or to go across the border to the United

States if they wished to have sanatorium treatment. The buildings at Fort Qu'Appelle were commenced in August, 1913, and owe their existence to the efforts of the Saskatchewan Anti-Tuberculosis League, which was formed in February, 1911. In November of that year it was decided to erect a sanatorium in the Qu'Appelle Valley and a site was chosen on the shores of Lake Echo. The plans were prepared by Mr. J. H. Puntin, architect, and Dr. (now Major) William H. Hart, M.C., the medical superintendent. The construction of the buildings was interrupted for a time by the war, but the work was recommenced last spring. The necessary funds were raised through private subscription by the Saskatchewan Anti-Tuberculosis League, and by government assistance. The president of the League is Mr. A. B. Cook, who was elected in 1913 and who recently returned from service overseas.

Some weeks ago a circular was sent by the Committee of Public Safety for the Commonwealth of Pennsylvania to the retail druggists of that State, impressing upon them the necessity for more than ordinary care in ordering drugs, pharmaceutical supplies, and biological products during the period of the war. The increased demand for such commodities, coupled with the difficulty of obtaining them, both factors the result of the war, has made it imperative that waste should be eliminated wherever possible. Many of these preparations are subject to deterioration and are useless after a certain period of time. If a druggist therefore orders more than he can reasonably expect to use and takes advantage of the privilege of returning after a certain time what he has not used, valuable products are wasted and a loss effected which can be ill afforded, particularly at this time. It is pointed out that if only one package of any article is returned by a retailer, approximately fifty thousand packages would be wasted if each druggist were to do the

same, not to mention the physicians and veterinarians who also use these products. The matter is one which might well be brought to the attention of physicians and druggists in this country.

THE Ontario Government has commissioned Mr. Justice Hodgins, who recently conducted an enquiry into the practice of medicine in that province, to enquire into the present methods of dealing with the imbecile, feeble-minded and mentally defective of the province, with power to suggest amendments to laws now in force and measures which, in his opinion, will improve existing conditions. We understand that the Commissioner will also be instructed to enquire into the prevalence of venereal diseases, particularly in their relationship to the treatment of the feeble-minded, and will be empowered to suggest measures with a view to restricting the spread of such diseases.

AN able address on health insurance was delivered before a number of medical men at the Toronto General Hospital on November 6th, by Professor Irving Fisher of the Department of Political Economy in Yale University. The war, Professor Fisher said, had placed a new estimate upon the value of human life and the losses in the present struggle made it all the more necessary that life should be conserved. Health insurance would increase vitality and should be brought about by medical men who made a study of industrial problems. When the men came back from the trenches after the war, they would make greater demands than ever before and in return for their patriotism and service would expect social insurance. The problem of an efficient democratic government had never been worked out satisfactorily but Canada had come nearer to a solution than the United States. Gratitude was an essential part

of patriotism. From fifty to seventy-five per cent. of the poverty in North America could be abolished by insurance against sickness. Disease was the cause of poverty rather than poverty the cause of disease. The great preventive medicine of the future would be individual hygiene. Professor Fisher had himself been instrumental in founding a Life Extension Institute in New York, where employees were medically examined, told what was the matter with them and how to take care of themselves. Our health ideals would be raised by the war and a great deal would have been accomplished when the individual began to realize his responsibility to the nation as well as to his own family. The country must be awakened to the importance and the prevalence of degenerative diseases.

A JOINT meeting of the Educational Sub-Committee and the Women's Activities Sub-Committee on Venereal Disease took place in Toronto on November 7th. Major J. J. Mackenzie, C.A.M.C., of the University of Toronto, who has recently returned from England on leave of absence, gave an interesting address on the work being done in England by the National Committee for combating Venereal Diseases, which is under the chairmanship of Lord Sydenham. The movement, he said, was spreading all over the country and the Executive Committee was anxious to get into touch with committees such as the one recently formed in Toronto, with a view to collaboration and exchange of literature. By such collaboration and coöperation the movement, it was hoped, would eventually become Imperial.

The question of literature was discussed at the meeting and a sub-committee was appointed to go into the matter and submit a report. It was resolved also to organize a group of lecturers who might be called upon to speak at public meetings. It is probable that committees similiar to the one at Toronto will be formed in other places in the near future.

The Association

THE NEXT ANNUAL MEETING

SINCE the Montreal meeting in June of this year, at which it was decided to meet next year in Winnipeg, circumstances have arisen which make it inadvisable to attempt to hold a meeting in the West. After consultation with President-elect, Dr. McKenty, and the executive of the Winnipeg Medical Society, the whole matter was laid before the executive council of the Association, and it was the almost unanimous opinion that an invitation which had been received from the Ontario Medical Association to meet with them in Hamilton should be accepted.

At a conference held in Hamilton a few days ago, at which delegates were present from the Canadian Medical Association, the Ontario Medical Association, the Hamilton Medical Society, the Canadian Public Health Association and the Canadian Association for the Prevention of Tuberculosis, it was resolved that for the coming year all these Associations would hold their annual convention during the same week and as far as possible combine their several programmes into one. The profession in Hamilton have given a very cordial invitation which has been accepted by all, and the Ontario Medical Association which had already made considerable progress in the arrangement of their programme, has given up one of their days for papers by members of the Dominion Association. The last week in May beginning on the twenty-seventh of the month, and extending till June 20th, has been selected as the time for the meeting. The profession in Hamilton are very enthusiastic on the proposal, and have already made excellent arrangements for room space in the Royal Connaught Hotel; an hotel quite large enough to accommodate about five hundred guests comfortably. We are publishing in this number a sketch plan of the programme as it is proposed to be carried out. We may add that every effort will be made to secure interesting papers on live topics, and several of our former Canadian students who have attained prominence in the large teaching centres to the south of us, will be invited to take part in the proceedings. The executive council of the Canadian Medical Association, while they regret the decision of the Winnipeg Medical

Society, that it was not advisable to hold the meeting in Winnipeg this year, are hopeful that Dr. McKenty will still act as president of the Association during the sessions when the meetings take place under its auspices.

This will be Canada's Medical Week, and we hope that as many members of our profession as possible will endeavour to arrange their plans so as to be present at this meeting, which promises to be one of the most notable ever held in Canada.

OUTLINE OF PROGRAMME—COMBINED MEETING

Ontario Medical Association, Canadian Medical Association, Canadian Public Health Association, Canadian Association for the Prevention of Tuberculosis

Monday—9 a.m. Ontario Health Officers
2 p.m. Ontario Health Officers
Canadian Public Health
8 p.m. Ontario Health Officers
Canadian Public Health

Programme and executive meetings to be arranged for by each Association.

Tuesday—9 a.m. Ontario Health Officers
2 p.m. Ontario Health officers
Canadian Public Health
8 p.m. Ontario Health Officers
Canadian Public Health

Ontario Medical Association (Committee of General Purposes).

Programme and executive meetings to be arranged for by each Association.

Wednesday—9 a.m. Canadian Association for Prevention of Tuberculosis
Ontario Health Officers
Ontario Medical Association (General Business Session)
2.15 p.m. Ontario Medical Association (General Session) President's Address.

2.30 p.m. Canadian Association for Prevention of Tuberculosis. Symposium on Tuberculosis. Arranged for by the Canadian Association for Prevention of Tuberculosis.

8 p.m. Ontario Medical Association
Canadian Public Health
Canadian Medical Association

Symposium on the Returned Soldier Problem. Arranged for by our Military friends.

Thursday—9 a.m. Ontario Medical Association (Sections)
2 p.m. Ontario Medical Association, Canadian Medical Association } General Session
8 p.m. Ontario Medical Association, Canadian Medical Association } General Session

Programme arranged for by the Committees of the Ontario Medical Association.

Friday—9 a.m. Ontario Medical Association (Sections)
2 p.m. Ontario Medical Association, Canadian Medical Association } General Session
8 p.m. Ontario Medical Association, Canadian Medical Association } General Session

Programme arranged for by the Officers of the Canadian Medical Association.

Saturday—9 a.m. Hamilton Clinical Day
Medicine (Long Ward)
Surgery (Operating room)

Programme arranged for by the Hamilton Medical Society.

Miscellany

Correspondence

In the November number of the Journal we published a letter from Dr. J. W. S. McCullough, chief officer of health, of Toronto, in which reference was made to the price of diarsenol charged by the Synthetic Drug Company, of the same city. We have received from them the following reply:

Toronto, *October 22nd*, 1917

The Editor,

The Canadian Medical Association Journal.

Sir,—

Our attention has been called to a letter in your Journal in a recent issue from Dr. J. W. S. McCullough, chief officer of health, in which he criticizes the prices charged by us for diarsenol, particularly the retail prices. He also makes some references to the decision of the Commissioner of Patents in the application for a license made by him.

As to the prices charged by us, we might say that notwithstanding the higher cost of labour and material they are similar to the prices charged in England as fixed by the Board of Trade, and in fact are more favourable as the following comparison of the prices charged for a ·6 gram. ampoule will show.

	British	Canadian
To Government	5/–	1.25
To Hospital and Wholesalers	6/–	1.25 for lots of 1000
To Retailers	7/6	1.25 for lots of 1000
To Physicians	10/–	1.25 for lots of 1000

Our reductions are made according to quantity as follows:

Lots of 50	$2.00
Lots of 200	1.75
Lots of 500	1.50
Lots of 1000	1.25

We might say that about 60 per cent. of our total sales for Canadian consumption are at the lowest discount rate.

Before the war the German wholesale price in Canada for salvarsan was $2.10 and the retail price from $3.00 to $4.00 or more.

In view of the fact that all other commodities have risen in price and raw materials and labour are higher than they were three years ago, the physicians and general public have not very much reason to complain of our prices. The retail dealers may, and in fact do sell at less than $2.50 for ·6 gram. ampoule.

There is no agreement between us and the trade to maintain prices and the retail druggists are at liberty to sell at any price they like.

As we are manufacturers we have not the facilities and do not desire to do a retail business.

Before Dr. McCullough made his application for a license we offered to sell diarsenol to him or the Government at the rate of $1.25 so that he could re-sell it at any price he liked or give it away for free treatment.

From our experience we know that it is impossible to manufacture and sell diarsenol at a lower price without suffering a loss. It is only by reason of our foreign business and large output that we are able to keep our prices down to the present level. If the Board of Health were to manufacture for the Ontario or even the Canadian market only, they would lose money at our prices, which loss would have to be made up out of the public treasury. As a matter of fact the members of our firm have drawn no profits from the business and have not between them been able to draw a reasonable salary for their services.

As this question has been raised by Dr. McCullough and as it will be of interest to your readers to see exactly what the Deputy Commissioner of Patents decided, we give you his decision in full which is as follows:

"In the matter of the orders and Regulations respecting Patents of invention made under The War Measures Act, 1914, and

In the matter of Patents Nos. 133,636; 144,873; 144,874 and 152,320, and

In the matter of the application of John Wm. Scott McCullough, of the city of Toronto, in the county of York, Ontario, chief officer of the health, Ontario, on behalf of Provincial Board of Health, Ontario, for a license to make use of the inventions covered by said patents.

These patents which are held by a German company cover processes for the manufacture of a product known as "salvarsan" or "606" which is generally used in the treatment of "syphilis," being apparently the most effective agent therefor.

On the 19th June last the applicant filed an application for a license to use the inventions covered by these patents, basing the same principally on the following allegation:

That the difficulty or impossibility of procuring the articles included under the Patent Numbers referred to and their excessive price and the general interest of the public make it advisable that these articles be manufactured by the applicant who has adequate facilities therefor in the laboratories of the Provincial Board of Health.

On June 27th last the applicant appeared in person and was heard on his application as were also several members of the medical profession. In opposition to the application counsel appeared and were heard on behalf of the Synthetic Drug Company, of Toronto, and Major Gustave Archambault, M.D., of Montreal, to both of whom licenses to make use of these inventions had previously been granted.

In addition to their oral statements the several parties submitted in support of their respective contentions written memoranda, documentary evidence and other matter.

After consideration of the whole matter I have for the reasons hereinafter mentioned come to the following conclusions:

The outbreak of the present war cut off the supply of this product, which had previously been brought from abroad and it was found that the quantity available was very limited, quite inadequate for the country's needs, was held at a price practically prohibitive and that thereby owing to the great prevalence of the disease mentioned the public welfare was being seriously injured.

On November 28th, 1914, a license was granted to the above mentioned Synthetic Drug Company, composed of Ernest Neil Macallum and Charles Newton Candee, Junior, both of Toronto, to make use of these inventions and shortly thereafter they succeeded in placing on the market the product in question manufactured by them under these patents.

That since so first placing their product on the market the Synthetic Drug Company have constantly and continuously supplied this country's needs therefor.

The price charged by the Synthetic Drug Company for their product is $1.25 for the ordinary dose of 0·6 gram. or nine grains,

in quantities, with proportionate prices for other doses, is reasonable and is practically the same as the price fixed by the British Board of Trade in licenses granted by them for the use of the corresponding British Patents.

Prior to the war the price paid by the wholesale trade in Canada for this product was $2.10 for the 0·6 gram. dose.

The Synthetic Drug Company are required under the terms of their license to pay to the Government in trust a royalty of 5 per cent. of the gross proceeds of the sale of their product.

The product of the Synthetic Drug Company is admittedly equal if not superior to the original "salvarsan" or "606."

The applicant has not satisfactorily established that he can produce this product more cheaply than he can obtain it by purchase from the Synthetic Drug Company.

The Synthetic Drug Company have invested a large amount of money in the manufacture of this product, have devoted a great deal of time and skill thereto and up to the present time have not been able to recoup themselves.

In view of the public service rendered by the Synthetic Drug Company as above mentioned the curtailment of their market by the granting of an additional license at the present time would be an injustice to them and the public interest would not be saved thereby.

It was apparent at the hearing that the present application for a license was for the purpose of enabling the applicant to control the prices charged by the Synthetic Drug Company rather than for the purpose of enabling him to manufacture the product.

The control of the prices to be charged by a licensee is vested in the Commissioner of Patents.

I am of the opinion that action on the application should for the present be suspended. If in consequence of a change in existing conditions the applicant should subsequently desire to be heard again and have his application reconsidered he may be given an opportunity.

Dated at Ottawa, this twelfth day of July, 1917.

(Sgd). GEO. F. O'HALLORAN,
Deputy Minister of Patents."

Thanking you for the space, we are,

Yours faithfully,

SYNTHETIC DRUG COMPANY, LIMITED.

Book Reviews

MODERN MEDICINE AND SOME MODERN REMEDIES. PRACTICAL NOTES FOR THE GENERAL PRACTITIONER. By THOMAS BODLEY SCOTT, with a preface by SIR LAUDER BRUNTON, Bart., F.R.S. 159 pages. Publishers: H. K. Lewis & Co., Ltd., 136 Gower Street, London, W.C., 1916. Price 4/6 net.

A series of essays upon disorders of the heart, arterio sclerosis, internal secretions, and chronic bronchitis, which while they open no very new ground, are filled with sound common sense upon the management of disease in general practice, and written by a seasoned general practitioner tinctured with the spirit of James MacKenzie of Burnley—that was. A small book well worth reading.

THE BASIS OF SYMPTOMS: THE PRINCIPLES OF CLINICAL PATHOLOGY. By Dr. RUDOLPH KREHL, ordinary professor and director of the Medical Clinic in Heidelberg. Authorized translation from the seventh German edition by ARTHUR F. BEIFELD, Ph.B., M.D., instructor in medicine, Northwestern University Medical School, Chicago. Third American edition. 517 pages. Philadelphia and London, J. B. Lippincott Company, 1916.

This is one of the books which can not be readily ticketed in any of the usual categories. It is neither a treatise upon pathology, physiology nor symptomatology, but partakes in part of all three. In some sections one predominates and in some another.

One might have some regrets that the name of the former editions, "Clinical Pathology," had not been retained, in place of the one now given. But the present edition, as the former ones, is eminently a sane, sound and conservative exposition of the subject of Clinical Pathology, and though much new matter has been incorporated, notably in the sections upon Immunity and Renal Secretion, the author has been loath to "cast the old aside".

If one might venture a criticism, it would be at the retention of a number of time-worn discussions, and the tendency in some places for soundness to develop into prosiness, a fault inherent in any translation.

The book is well printed, and of convenient reading size, and has the important paragraphs in leaded type for ready reference. There is no other book just like it, and for the clinican it contains readily available matter not to be found elsewhere.

CATARACT: SENILE, TRAUMATIC, AND CONGENITAL. By W. A. FISHER, M.D., Chicago Eye, Ear, Nose and Throat College.

Fisher's book, for the most part, is a plea for the so-called Indian or introcapsular extraction of the lens as advocated by Colonel Smith of the Indian Medical Service. The essentials brought out are largely a repetition of technical points advocated by a few American surgeons who have obtained their experience first hand while in India.

The chief difficulty which the author is willing to acknowledge is that of loss of vitreous. Dr. Fisher has devised a special lid hook or retractor, which he uses instead of the usual eye speculum. This procedure apparently avoids spasmodic contracture of the lids upon the eye ball when once the cornea has been opened. The rest of the operation consists in dislocating the lens by means of the Smith hook by pressure on the cornea below, and by performing a version of the lens, delivering it in its capsule through a fairly large corneal incision.

A large series of cases performed by the author with excellent results would rather endorse this procedure; but the very noncommittal evidence of ophthalmic authorities in America would cause the ordinary surgeon to hesitate before adopting such radical measures, when equally good visual results are to be obtained by the older fashioned technique.

It has been recommended that the operation may be practised upon kittens; the author apparently has overlooked the point that cats' eyes and those of humans are in no wise comparable histologically, and that human vision is too valuable to experiment with after such preliminary technical experience. He also advocates sealing both eyes with a starched bandage and leaving it undisturbed for ten days after the operation. This would also appear as somewhat radical when statistics show that even in the more conservative operation iritis occurs in some form in almost half the cases operated upon, not to mention delayed healing of the wound, sepsis, incarceration of the iris and other complications.

The book, however, is a plea based on experience, and a reviewer is not entitled absolutely to condemn what he has not

himself practised or seen practised. It is quite conceivable that the operation may be of distinct value for the removal of immature cataracts when working vision has been practically inhibited.

CONGENITAL WORD-BLINDNESS. By JAMES HINSHELWOOD, M.A., M.D., F.R.C.P.S., late surgeon to the Glasgow Eye Infirmary. Price 4/- net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C., 1917.

This is a most original and interesting work in word-blindness and leaves no doubt in the mind of the reader that the author has a full knowledge of his subject. The many errors in diagnosis of this condition have been carefully explained and simplified.

HYGIENE AND PUBLIC HEALTH. By LOUIS C. PARKES, M.D. D.P.H., University of London, lieutenant-colonel R.A.M.C., (temporary), consulting sanitary adviser to H. M. Office of Works; and HENRY R. KENWOOD, M.B., F.R.S., D.P.H., London., lieutenant-colonel R.A.M.C., (temporary), Chadwick professor of hygiene in the University of London. Sixth edition. 774 pages with illustrations. Price 14/- net. Publishers: H. K. Lewis & Co., 136 Gower Street, London, W.C., 1917.

This is an excellent account of the subject of Public Health as it is now understood. It does not purport to be a manual for the public health laboratory, and does not therefore give directions for the examination in any detail of water, air, soil, etc. It is thoroughly up to date in giving, for instance, a chapter on maternity and child welfare, and it has a chapter on school hygiene with valuable notes for inspecting officers. We are pleased to find that "draughts" and "chills" are treated of as real dangers. We should have expected some reference to the pioneer work in ventilation by the Rev. Stephen Hales. We would point out that the expression is "immune from" not "immune to" a disease.

A TEXT-BOOK OF FIRST AID AND EMERGENCY TREATMENT. By A. C. BURNHAM, M.D., instructor in surgery in the Polyclinic Hospital, New York. 298 pages with 160 engravings. Publishers: Lea & Febiger, Philadelphia and New York, 1917.

If a person cannot acquire the understanding of what first aid to the sick or injured means from this book, his is a "lost

mind". Nothing so practical or succinct has been written on First Aid for a long time. Almost all the illustrations are beyond cavil. Everything is explained *ab initio*, nothing, not even the constitution of vinegar, is left to the imagination. The illustration of Schäfer's method for the restoration of the drowned is not quite extensive enough to explain the method to a person who never saw it performed.

POLIOMYELITIS IN ALL ITS ASPECTS. By JOHN RUHRAH, M.D., professor of pediatrics in the University of Maryland Medical School, and ERWIN E. MAYER, M.D., first lieutenant in the medical officers' reserve corps, United States Army. 276 pages, illustrated. Price $3.25. Publishers: Lea & Febiger, Philadelphia and New York, 1917.

This is a truly admirable work, a model of what a monograph on a disease ought to be. Aided by excellent illustrations, the more purely scientific problems are treated exhaustively, yet not pedantically. The volume opens with a history of the disease which apparently was not described for the first time before 1874.

The sections on treatment are as good as those devoted to the description of the disease. There is an excellent chapter on prophylaxis, the directions being well adapted to the comprehension of any person with average intelligence though without special training. The chapter entitled anatomical and physiological reminders is invaluable; we think it ought to have come much earlier in the book.

What is known on Poliomyelitis and is not in this book, is not worth knowing.

FOOD POISONING. By EDWIN OAKES JORDAN, chairman of the Department of Hygiene and Bacteriology, the University of Chicago. Price $1.00 net. The University of Chicago Press, Chicago, 1917.

The author deals with the subject of food poisoning in an interesting way. He takes up first the extent of food poisoning. He then takes up the sensitizing of protein foods. The poisoning from plants and animals is discussed. He then passes under review the poisons that may be added to foods such as the various poisonous minerals and food preservatives, and takes up the

topic of food-borne bacteria. This little volume is a very useful addition to works on this subject, and is sure to find a place for itself.

PULMONARY TUBERCULOSIS: ITS DIAGNOSIS, PREVENTION, AND TREATMENT. By W. M. CROFTON, M.D., lecturer in special pathology, University College, Dublin. 119 pages with 20 illustrations. Price 6/- net. Publishers: J. & A. Churchill, 7 Great Marlborough Street, London, 1917.

Under the headings of bacteriology, anatomy, histology, physiology, methods of infection, pathology, diagnosis, prophylaxis, and treatment, the author attempts in this handy little volume to give an excellent resumé of our knowledge of pulmonary tuberculosis. In the treatment of the disease he advocates the intravenous injection of iodoform, beginning with a quarter of a grain every second day. He also gives a good deal of attention to the immunizing of people by the use of tuberculins. The book is quite interesting and will stimulate effort along these lines of treatment.

THE CAUSATION OF SEX IN MAN. A new theory of Sex based on clinical materials, together with chapters on forecasting or predicting the sex of the newborn child and on the determination or production of either sex at will. By E. RUMLEY DAWSON, L.R.C.P., London, M.R.C.S., England., late member of the Council of the Obstetrical Society of London and Fellow of the Royal Society of Edinburgh. Formerly resident obstetric house physician to the Westminster Hospital. Second edition with 22 illustrations. H. K. Lewis & Co., 136 Gower Street, London, W.C., 1917. Price 7/6 net.

This is a very interesting book and one that should attract a good deal of attention. It will be some time before the views set forth by the author can be either confirmed or set aside, or modified. The author states that the right side ova are intended to give origin to males, and he states that women prefer to sleep on the right side. He contends that this favours the entry of the spermatozoa into the right tube. This accounts for more male children being born than female. By cultivating the habit of sleeping on the right side, the number of males could be increased. The author deserves praise for the great amount of labour he has devoted to this subject.

Obituary

MAJOR R. H. BONNYCASTLE, C.A.M.C.

It was with the greatest regret that the news was received of the death of Major Bonnycastle, who succumbed to an attack of pneumonia on Sunday, October 7th. Dr. Bonnycastle had been in practice in Campbellford, Ontario, for eight years, when, in May, 1915, he went to England and accepted a commission as lieutenant in the Royal Army Medical Corps; two months later he went to France with the 15th Scottish Division. He was subsequently transferred to the Canadian Army Medical Corps, and, in August, 1916, was promoted to the rank of major. He returned to Canada in charge of a party of invalided soldiers and was appointed superintendent of training and hospital work at Valcartier Camp. A few months ago he returned to Campbellford to resume his practice. Richard Henry Bonnycastle was born in Seymour Township in the province of Ontario in 1881, the son of a pioneer settler in that district. He was educated at the Campbellford High School and received his medical training at the University of Toronto, where he graduated in 1905. The following year he began to practise in his native town. Major Bonnycastle leaves a widow and two children.

PROFESSOR G. L. SINCLAIR

Professor Sinclair, whose death took place recently at Jacksonville, Florida, occupied the Chair of Anatomy for some years in the Halifax Medical College, and later became professor of nervous and mental diseases in that institution. He was also Dean of the College for a number of years. George Law Sinclair was born at Norfolk, Virginia, about sixty-five years ago and was the son of a naval officer in the Southern Confederacy. He graduated from Columbia University, New York, in the year 1872. He was a brilliant lecturer and, as a teacher, won the affection and esteem of his students. In 1898 Dr. Sinclair was appointed inspector of humane institutions in the province of Nova Scotia and in that capacity instituted many reforms and improved conditions in the jails and county asylums of the province. He was also a strong advocate of the establishment of a provincial in-

stitution for the care of the feeble-minded. In 1899 Dr. Sinclair was appointed to the Medical Board of Nova Scotia as representative of the provincial government. He was also president of the provincial medical society. As superintendent of the Nova Scotia Hospital for the Insane, a post which he filled for many years, Dr. Sinclair endeared himself to all those with whom he came into contact by his sympathy and never failing patience, and it was chiefly through his influence that a nurses' training school was established at the hospital. His failing health made it necessary for him to give up active work a few years ago, but he never lost his interest in medical matters and always kept himself well informed of professional activities.

HONOURABLE T. S. SPROULE, M.D.

THE death of Senator Sproule occurred at Markdale, Ontario, on November 10th. He had enjoyed fairly good health since his return to Markdale upon the prorogation of Parliament a few weeks ago, but had a seizure late on the evening of the 9th and passed away in a few hours. Dr. Sproule was born on October 25th, 1843, of Irish parentage, in the township of King in the province of Ontario, and graduated from the Victoria University, Toronto, in 1868. A few years later he settled in Markdale, where he had resided ever since. He had a long and notable parliamentary career and was generally recognized as leader of the Orange party. He was first elected to the House of Commons in 1878, and was reëlected at each succeeding election. In November, 1911, Dr. Sproule was appointed Speaker of the House, a position he occupied until December, 1915, when he was summoned to the Senate; at that time, with the exception of Sir Wilfred Laurier, Dr. Sproule had the distinction of being the oldest parliamentarian in the House of Commons. Dr. Sproule succeeded N. C. Wallace as Grand Master of the Loyal Orange Association of British America. He was also a member of the advisory board of the Liberal-Conservative Union of Ontario.

CAPTAIN ARTHUR M. FISHER, R.A.M.C.

CAPTAIN ARTHUR M. FISHER, R.A.M.C., who was killed in action in France at the beginning of November, was a graduate of McGill University of the year 1914 and at the time the war began was attached to the surgical staff of the Royal Victoria Hospital, Montreal. One of four Canadian surgeons sent to join

the British Forces in the summer of 1915, Captain Fisher was appointed medical officer on a transport running between England and Alexandria. The vessel was torpedoed and Captain Fisher, though fortunate enough to escape with his life, lost all his personal belongings. Some time later he was invalided to England where he underwent a serious operation and, in the summer of 1916, when he was able to travel, returned to recuperate in Canada. The following autumn, however, Captain Fisher returned to England and subsequently to France where he met his death. He leaves a widow.

CAPTAIN KENNETH ANGUS MacCUISH, C.A.M.C.

Captain MacCuish, who died recently in a French hospital of wounds received while on duty at the battle front, went overseas with the St. Francis Xavier hospital unit, and, after serving for a short time in a hospital in England, proceeded to France. Captain MacCuish was about forty-three years of age. He was born at St. Peters and graduated from Dalhousie University in 1903 and some years later did post-graduate work at Edinburgh. He practised at Glace Bay for about fifteen years, then went to Dominion, and later returned to Glace Bay where he continued to follow his profession until he joined the staff of No. 9 Stationary Hospital. Captain MacCuish leaves a widow, who resides at Glace Bay.

Dr. John McRuer died at the Denver Hospital, Colorado, on October 31st, after a long illness, in the thirty-third year of his age. Born in Ayr in the province of Ontario, Dr. McRuer graduated from the University of Toronto in 1907 and practised for a time near Huntsville. The funeral took place at Toronto, on November 6th.

Dr. Hugh Ryerson Bright died suddenly at Athens, Ontario, on November 9th. Dr. Bright was born in Wellington County in the province of Ontario in 1884, and graduated with honours from the University of Toronto in 1904. After practising for a few years in Exeter, he went to Athens about two and a half years ago, where he built up a large connexion, his genial disposition winning him many friends. Dr. Bright leaves a widow and two little sons. The cause of death is thought to have been a bruise sustained in an automobile accident the day before his death.

Dr. Charles Merrill Smith died at Alberni, British Colum-

bia, in October and was buried at Summerland, in that province. Dr. Smith was born in 1848 and graduated from the University of Toronto in 1870. He practised at Sault Ste. Marie, Ontario.

DR. ROBERT COLLISON, of Edmonton South, died on October 20th, at the age of seventy-three years. A graduate of McGill University of the year 1878, Dr. Collison first went into practice in New York, but soon afterwards went to the West, settling in what was then the small village of Strathcona. There he continued his professional work, watching the village grow into the city and making himself beloved of his patients. He continued active practice until about a year ago, when his failing health made it incumbent upon him to give up his duties. He leaves a widow and an adopted daughter.

News

MARITIME PROVINCES

As a preliminary step towards the establishment of a health department as a branch of the New Brunswick Government, a survey of health and sanitary conditions in the province has been undertaken by Mr. John Hall, a graduate of the Massachusetts Institute of Technology. Mr. Hall will conduct an investigation into such matters as the public control and protection of food and milk, the slaughter houses, the sanitation of stores where food is sold, the existence of communicable diseases and methods of prevention, medical and sanitary conditions in schools, water supply and disposal of sewage. Mr. Hall will also submit a report on means of improving health conditions, the number of officers required to conduct public health work in an efficient manner, and the estimated cost of such an undertaking.

A NUMBER of cases of smallpox have occurred in certain districts in New Brunswick during the past month.

THE main building of the Camp Hill Military Hospital at Halifax is now completed. It is beautifully situated and contains eight large wards, with accommodation for altogether seven hundred and fifty patients. Two additional wings and a vocational

building are now under construction. The latter will contain class and lecture rooms, a garage and workshops, a bowling alley, and a theatre with a seating capacity of six hundred, provided with a stage and a motion picture apparatus.

ONTARIO

In presenting the report of the medical board of the Toronto Hospital for Incurables at the annual meeting of the Board of Trustees, Dr. F. C. Harrison, the medical superintendent, said that three hundred and twenty-four patients had been treated in the institution during the past year. Seventy-four deaths had taken place, of which twenty had been caused by cancer. There had been no cases of contagious disease. The financial statement showed an overdraft of $9,182.

A resolution was passed unanimously by the Toronto Ministerial Association on October 29th, pledging the whole-hearted support of the association in the measures taken against venereal disease and requesting the government to take the necessary steps to place such disease in the same category as smallpox and other infectious diseases.

Dr. F. N. G. Starr, of Toronto, has been elected second vice-president of the Clinical Congress of the American College of Surgeons.

The following is the list of communicable diseases reported in the province during the month of October: Diphtheria, 375 cases, 20 deaths; scarlet fever, 130 cases, 2 deaths; tuberculosis, 160 cases, 68 deaths; measles, 141 cases, 1 death; smallpox, 17 cases; whooping cough, 98 cases, 6 deaths; typhoid fever, 59 cases, 5 deaths; infantile paralysis, 14 cases, 4 deaths; cerebro-spinal meningitis, 2 cases.

The twenty-second annual meeting of the trustees of the Kitchener-Waterloo Hospital took place on October 23rd, when the resignation of Mr. J. B. Hughes, who has been chairman of the Board for many years, was accepted with regret. Mr. E. P. Clement, K.C., was chosen to take the place of Mr. Hughes, who was appointed honorary president of the Board of Trustees. During the past twelve months one thousand and fifty-nine patients

have received treatment in the hospital; nine hundred and ninety-six patients were discharged and fifty-nine deaths occurred; there were ninety-one births in the hospital during the year.

AT a recent meeting of the St. Thomas Medical Association it was decided that no prescriptions for intoxicants should be issued in future by members of the association.

SEVERAL cases of smallpox have been reported in Hawkesbury during the past few weeks.

QUEBEC

AN outbreak of diphtheria and scarlet fever in October caused the authorities to close the schools at Sherbrooke for a few days.

MANITOBA

DURING the past few months diphtheria has been prevalent in several parts of the country. In Winnipeg a number of cases have been reported and at the end of the first week in October there were a hundred and forty patients under treatment in the King George Hospital. Among those who contracted the disease was Dr. W. J. Sharman, acting bacteriologist at Winnipeg.

SASKATCHEWAN

A MEETING of delegates from the rural municipalities of Newcombe, Royal Canadian, Elma, Oakdale, Kindersley, and the town of Kindersley took place in October to discuss the by-laws and agreements necessary to permit of the establishment of a municipal hospital in that part of Western Saskatchewan. The by-laws will be submitted to the ratepayers at the annual elections this month.

A SERIOUS outbreak of diphtheria was reported in November from St. Louis, which lies about twenty miles south of Prince Albert.

BRITISH COLUMBIA

A GRANT of $10,000 has been made to the Kootenay Lake General Hospital by the provincial government.

MEDICAL COLLEGES

Toronto University

THE University Hospital Supply Association held its annual meeting on October 18th. Since March, 1915, the sum of $87,837 has been received by the association, and thirty-two thousand nine hundred and nineteen articles have been made by members and sent to No. 4 General Hospital.

ARMY MEDICAL SERVICES

CAPTAIN ROY COOTS, C.A.M.C., has returned to Toronto on sick leave. Captain G. Lockhart Gall, R.A.M.C., of Montreal, is also on sick leave. Captain Gall was wounded in the foot last August.

DR. T. W. WALKER, of Saskatoon, is attached to the staff of the Duchess of Cannaught's Canadian Red Cross Hospital at Taplow, and is in charge of cases of heart and lung affection.

LIEUTENANT-COLONEL GEORGE BADGEROW, C. A. M. C., formerly of Toronto, has been appointed consulting surgeon to the South African Eye and Ear Hospital at Richmond, England.

CAPTAIN F. B. GURD, who has been surgeon specialist to the 22nd Casualty Clearing Station, R.A.M.C., for the past two years, has been transferred for three months to Adler Hey Hospital (Robert Jones' hospital) Liverpool, England, to do special work there. Captain Gurd has just recently been made a Fellow of the American College of Surgeons.

DR. T. B. FUTCHER, of Johns Hopkins Hospital, has been gazetted lieutenant-colonel and posted as officer in charge of the medical service at the Ontario Military Hospital, Orpington.

LIEUTENANT-COLONEL C. H. GILMOUR has been transferred from the Canadain Officers Hospital, Broadstairs, to be officer in charge of the surgical service at the Ontario Military Hospital.

A NUMBER of changes have taken place in the personnel of No. 7 Stationary Hospital (Dalhousie University unit). Major

L. M. Murray has been transferred to take charge of the medical service at the Canadian Convalescent Hospital at Bushby Park. Captain F. V. Woodbury is now with the A.D.M.S. of the Third Canadian Division; Captain John Rankine is the medical officer to the 12th Field Ambulance; Captain M. A. Macaulay, who has been medical officer to the 4th Field Ambulance, has been invalided to Canada. Captain D. A. MacLeod is at present medical officer to the Princess Patricia Canadian Light Infantry. Captain J. A. Murray has returned to England and Captain J. F. Ellis (late speaker of the House of Assembly of the Province of Nova Scotia) has joined the Dalhousie unit; Captain A. H. McKinnon, a graduate of the University of Dalhousie, has also joined the hospital in exchange for Captain E. K. Maclellan, who was transferred to the St. Francis Xavier unit (No. 9 Stationary Hospital). Lieutenant S. R. Balcom also joined No. 9 Stationary Hospial, which is at Bramshott, England. Among the officers at present attached to the Dalhousie Hospital unit, of which Lieutenant-Colonel John Stewart is in command, are four of the original members of the unit, Captains Victor Mackay, K. A. Mackenzie, Karl F. Woodbury and W. Taylor. Those who have been transferred to the unit are: Captain A, M. Rolph, of Toronto. radiologist; Captain R. H. Ellis, of Ottawa, a Nova Scotian by birth; Captain W. R. Coles, of Prince Edward Island, who was in practice in Regina; Captain A. Arthur, of Winnipeg; and Captain Herbert Murray, of Owen Sound. Captain T. McGonigle and P. McQuillan are the present chaplains.

Captain J. M. E. Prevost, C.A.M.C., of Montreal, has been appointed medical officer of the Second Depot Battalion of the Second Quebec Regiment, which is under the command of Lieutenant-Colonel Daly Gingras, D.S.O. Captain Prevost has already seen service in France and has been twice wounded. He first went overseas with the Fifteenth Battalion, Toronto Highlanders, and afterwards transferred to the Twenty-second Battalion (French Canadian).

The Military Cross has been awarded to the following officers:

Captain Thomas Herbert, C.A.M.C.
Captain John Philip Selby Cathcart, C.A.M.C.
Captain Douglas Creighton, R.A.M.C.
Captain Franklin Fletcher Dunham, C.A.M.C.
Captain Emmet Andrew McCusker, C.A.M.C.

Captain Arthur Allan Parker, C.A.M.C.
Captain William Henry Scott, C.A.M.C.
Captain J. Charles Sutherland, C.A.M.C.
Captain James Walter Woodley, C.A.M.C.

CASUALTIES

Killed in Action

Captain Arthur M. Fisher, R.A.M.C., of Montreal.

Died of Wounds

Captain K. A. MacCuish, C.A.M.C., of Glace Bay, Nova Scotia.

Canadian Literature

The Canadian Journal of Medicine and Surgery, August, 1917:

Daufresne's latest improvement of Dakin's solution . . . . . C. H. Gilmour.

The Canadian Journal of Medicine and Surgery, September, 1917:

Trichloracetin acid in dermatology . . W. H. B. Aikins.

Dominion Medical Monthly, September, 1917:

Typhoid fever in rural communities . S. F. Millen.

Medical Societies

ALBERTA MEDICAL ASSOCIATION

THE twelfth annual meeting of the Alberta Medical Association took place in Calgary, September 26th to 28th, 1917. The sessions were held in the well appointed rooms of the Board of Trade, and with two exceptions, the programme as arranged was carried out. The attendance was good, seventy members registering during the meeting,, and many important resolutions bearing on different aspects of public health and other matters were discussed and action taken. The Association strongly endorsed resolutions:

(a) Favouring the establishment of a separate Government Department of Public Health, having at its head a competent Deputy Minister who shall have special qualifications for that position.

(b) Favouring a propaganda of education of the public, with a view to controlling and limiting the spread of venereal diseases.

(c) Expressing strong disapproval of the grossly exaggerated statement made by Dr. Ritchie of Cochrane, Alberta, regarding the prevalence of goitre in Canada, and particularly Western Canada, in the following terms:

> "Whereas statements have appeared in the press of Alberta from time to time giving the impression that goitre is extremely prevalent in the province, and inasmuch as the statement has been made by certain members of the profession that from 50 to 100 per cent. of the population is affected by goitre; We, the members of the Alberta Medical Association, representing all the urban and rural districts of Alberta, desire to place ourselves on record as being of the opinion that goitre is not any more prevalent in Alberta than in other parts of Canada. We desire further to state that, in our opinion, there is absolutely no reason for anxiety regarding the spread of the disease. Further that we place ourselves on record as disagreeing absolutely with the statements made by Dr. Ritchie in his paper regarding the prevalence of goitre."

The meeting was from every point of view highly successful

and the visiting members much appreciated the courtesy and splendid hospitality extended to them by their Calgary confrères during the sessions. The president, Dr. W. A. Lincoln, delivered the presidential address at the evening session of the first day. The meeting next year will be held in Edmonton. The president for the year 1918 is Dr. D. G. Revell, professor of anatomy, Alberta University, and the secretary-treasurer, Dr. T. H. Whitelaw, medical officer of health, Edmonton.

The programme was as follows:

WEDNESDAY, SEPTEMBER 26TH,—AFTERNOON SESSION:

Registration. Installation of Officers. Business.

Report of a case of anthrax with recovery.—Dr. P. M. Campbell, Lethbridge.

Osteo-myelitis of humerus.—Dr. F. J. Folinsbee, Edmonton.

Treatment of cystitis.—Dr. J. W. Richardson, Calgary.

EVENING SESSION:

Address of welcome.—Mayor Costello.

Address.—Mr. F. M. Black, Calgary Board of Trade.

Reminiscences.—His Honour Dr. R. G. Brett, Alberta.

President's address.—Dr. W. A. Lincoln, Calgary.

THURSDAY, SEPTEMBER 27TH—MORNING SESSION:

Case Report of posterior mediastinal abscess.—Dr. E. H. Reed, Calgary.

Paper.—Dr. R. B. Wells, Edmonton.

"Mesenteric thrombosis."—Dr. R. B. Deane, Calgary.

"An unusual case of infection."—Dr. J. L. Allen, Calgary.

Reports of committees, etc.

Lunch at Board of Trade rooms.

AFTERNOON SESSION:

"Report of case of superfœtation."—Dr. T. H. Crawford, Calgary.

"Spinal concussion."—Dr. F. W. Gershaw, Medicine Hat.

"Complications of gall-bladder disease."—Dr. E. W. Allin, Edmonton.

"The elimination of tuberculosis."—Dr. J. S. Wright.

"Quarantine of the minor infections."—Dr. T. H. Whitelaw.

EVENING SESSION:

Smoker.

FRIDAY, SEPTEMBER 28TH—MORNING SESSION:

"Congenital stenosis of colon."—Dr. J. S. Murray, Calgary.

"Some results of *x*-ray therapy."—Dr. G. H. Malcomson, Edmonton.

Business.

Auto trip about Calgary. Luncheon at Bowness Park, as guest of Calgary members.

AFTERNOON SESSION:

Symposium on Goitre:

"Goitre in Canada."—Dr. T. G. Ritchie, Cochrane.

"Etiology" (special reference to Alberta)—Dr. J. V. Follett, Calgary.

"Physiology of thyroid."—Dr. J. B. Collip, Edmonton.

"Pathology of goitre."—Dr. D. G. Revell, Edmonton.

"Medical treatment."—Dr. G. A. Anderson, Calgary.

"Surgical treatment."— Dr. C. E. Smyth, Medicine Hat.

THE KINGSTON AND FRONTENAC MEDICAL SOCIETY

THE Society held its monthly meeting October 15th, with the president, Dr. Mylks, in the chair. Through the kindness of Lieutenant-Colonel W. T Connell, the meeting was held in the electrical room of Queen's Military Hospital.

Major Mundell presented nine cases from the surgical wards.

Head injuries: Three patients were shown with injury to the vault with loss of bone. The first suffered from headaches, epileptic seizures, etc. The opening in the cranium was in the parieto-frontal region, four inches by one inch and a half, with its long axis parallel to, and about one and a half inches outside the midline. At operation several spicula of bone were found pressing on motor and sensory areas of the cortex. These were removed and the defect in the vault filled in by a transplant from the anterior surface of the tibia, following the lines advised by Morison (*British Journal of Surgery*, January, 1917). There has been no return of either headaches or convulsions and the graft appears to be in a healthy condition.

The other two head cases showed definite damage to the leg area of the motor cortex. In the one the paralysis was limited to the flexor muscles, in the other all the muscles were paralyzed.

Sciatic nerve injuries: A number of cases of irritative and of destructive lesions of this nerve have been under observation. One case of irritative lesion followed gun shot injury with compound fracture of the femur, the nerve becoming entangled in the scar. An operation had been performed in England with the object of freeing the nerve but without success, as the man has still marked hyperæsthesia of the limb below the lesion in the parts supplied by this nerve. So far, treatment has been of no avail.

The second case was that of gun-shot injury destroying the nerve about the middle of the thigh with resulting paralysis and anæsthesia. Nine months elapsed between the date of injury and his return to Canada.

Miscellaneous cases: 1. Scrotal hæmatocele; palpation revealed fluctuation; transillumination, by means of a pocket flashlight as practised in hydrocele, was impossible; a hypodermic needle showed blood.

2. Case of loss of pulley action of anterior annular ligament of the ankle.

3. Case of tuberculous cystitis and pyelitis.

4. Case of old empyæma which had cleared up with the use of the bismuth paste.

Captain Gibson showed a series of cases from the medical wards.

1. Shell shock: Two patients, who had been at Vimy Ridge, were shown. Both had been buried by shells. Both were unconscious when dug out and were deaf, dumb, and blind for three and seven days respectively, after regaining consciousness. These men are still quite nervous and excitable, with jerkiness of muscles, speech, etc.; reflexes markedly exaggerated. Both are recovering and are now able to feed and dress themselves, and take a few steps. A third case was shown who had been in a somewhat similar condition on admission, but is now able to walk about the hospital. Treatment in these cases has been largely by suggestion, the patients being assured that they would recover, that return to their homes would take place as soon as they could control themselves and that their services would not be further required in the present war.

2. Paraplegia: Two cases were shown, one functional, the other organic.

3. Partial heart-block history of rheumatic endocarditis; Wassermann negative, rate 40-42.

4. Case for diagnosis: Pellagra suggested. (The patient has an empyæma discharging through the bronchi as well as externally.) A sharply defined symmetrical erythema developed on the hands and face in early summer when he was wheeled out in the open air. At no time has there been burning or itching or vesiculation There is a moderate nasal seborrhœa. Disturbances of digestion have not been more marked than what might reasonably be expected from his primary illness. The man is somewhat depressed but shows no definite mental symptoms. Several physicians who had seen Box's case in London in 1913 discussed the diagnosis, but agreed that owing to the serious nature of the man's primary illness, the absence of definite mental features, and of disturbances of digestion, a diagnosis could scarcely be made. All agree, however, in the possibility of the case turning out as one of true pellagra.

Captain Asselstine described tests for ascertaining the functional activity of the kidney in nephritis The tests had been carried out on a number of cases of trench nephritis in the ward. The value of these tests will be discussed at the next meeting.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE sixteenth regular meeting of the Society was held Friday evening, May 18th, 1917, Dr. W. S. Morrow, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. C. T. Crowdy.

1. This specimen came to autopsy about six weeks ago and was from a female, aged forty-two, who had been quite well up to October, 1916, when she applied at one of the outdoor services for treatment. A diagnosis was made of bilateral apical tuberculosis, which was proved correct at autopsy. After a month's treatment she developed difficulty in breathing which at the time was diagnosed as due to a tuberculous ulceration of the larynx. Treatment was kept up for several months with little or no improvement and in January, 1917, difficulty in swallowing began, at times worse than others. Before admission to hospital in March, the patient had not been able to swallow anything for three days. On making a physical examination it was found that there was a slight degree of exophthalmos with nervous symptoms and the thyroid gland on the right side was slightly enlarged and nodular. A diagnosis was then made of carcinoma of the thyroid gland and she was operated upon; and the right half was found to be

involved and was removed. About ten days later she came to autopsy. In the meantime microscopical sections had been made and it was found that this was not primarily of the thyroid but a growth in the œsophagus which had invaded the thyroid gland and also the trachea with ulceration. For that reason I thought the specimen rather interesting, showing not only in the œsophagus the ulceration but in the trachea, about an inch below the vocal cords, a perforated ulcer which had given the symptoms in the fall. It shows how hard it would have been to make a correct diagnosis as this ulcer is quite low down and she had a definite tuberculosis of the lungs as well.

2. This specimen shows what commonly occurs in accidents,—an extensive injury to one of the visceral organs without external marks. The patient, aged thirty-two, was apparently in good health when he was knocked down by an automobile and rushed to hospital in a state of collapse; externally there were only a few scratches and bruises but it was evident that there was some serious internal injury. A diagnosis was made of rupture of one of the visceral organs and it was thought to be probably the spleen. At operation, however, the abdomen was found full of blood and there was a large laceration of the liver. This laceration was so extensive that hardly anything could be done except to try and stop the bleeding by packing with gauze. The patient died next day and this specimen shows what an extensive laceration had occurred with so little external sign.

3. An omental femoral hernia. This specimen is of interest because of its appearance. It is a very simple thing but looks very much like malignant tumour and might be easily taken for thyroid, ovarian or other growth, but in reality it is simply an omental hernia. It was removed from a lady aged fifty-eight years, operated on last month, having had for twenty years a right femoral hernia for which she had worn a truss. It had not bothered her much until lately when it had been growing larger. A fortnight before admission it could not be reduced and she entered hospital for relief. Sections from the mass removed simply show fat; there is no bowel.

Discussion: Dr. M. Lauterman: These two very interesting cases recall similar ones I have had. The case of malignant disease recalls a case I saw many years ago in which two pathological conditions existed together and it is very confusing when one has two conditions co-existing. A gentleman had an apical tuberculous lesion and in addition had specific disease of his larynx; and as it was before our technique was as good as it is now, the Wasser-

mann test, etc., being unknown, the difficulty of diagnosis was evident. This brings home to us the fact that two conditions may exist in one case. The ruptured liver case is interesting and it is far from uncommon to have cases where externally there is little or no sign, whereas there may be severe internal injury. I recall the case of a boy, in 1900, who while looking after horses got kicked in the abdomen. He had nothing but the mark of the horse-shoe on his abdomen, the skin was not even broken, but the intense shock made one feel that there was something very serious going on; we brought him into town and found a ruptured kidney and, very fortunately, the boy got well. It is astonishing how little external evidence there is in some of these cases of very severe injury in the abdomen. Cases are recorded in which the bowel was ruptured but there was nothing but the intense shock to show that serious injury had been sustained. This shock therefore is an important point.

PAPERS: 1. "Modern methods in the treatment of fractures, with illustrative cases," by Dr. F. R. England. (Published in this issue.)

DISCUSSION: Dr. Geo. Fisk: I had the pleasure of assisting Dr. England particularly with the thin band and it appears to me a very practical thing for any oblique fracture of the long bones. With a proper fracture table it is very easy to extend the fragments and pass this band around, and it is then merely a matter of tightening up and extending at the same time. Once the band is tightened it is an easy matter to catch it up in the slot and the limb is then quite firm; once it is applied it holds very firmly. It is a method that has come to stay and has advantages over the plate and screws and the other system of simply driving screws through the bones. One of the points that I think is an improvement is that there is much less chance of its becoming loosened. When the screws and the plate are employed, a very little inflammation may cause the screws to loosen and the plate to shift. With the band any movement that may occur is not enough to damage the formation of bone or cause excessive callus but rather stimulates circulation and encourages healing. Another point with fixation by either the band or the plate, is that it allows one to apply massage very much earlier in the case and promotes nutrition about the bone and limb.

Dr. A. E. Garrow: The Society is to be congratulated on the excellent paper Dr. England has given to-night on a very important subject. He does not mention in the paper, however, some of the disadvantages of the various forms of treatment which

he discussed. The first of these, and one which I am glad to say seems to be becoming less frequent, is the treatment of fractures by splints and one of the unfortunate complications which follows this method is Volkman's paralysis. From hospital experience the application of splints by the general practitioner is much better than it was four or five years ago. This idea of plating above and below and without fixing the fractures or attempting to hold them in position is becoming well understood. With respect to the band which has raised such a good testimony, when I had an opportunity of seeing this band it did not appeal to me except for instance in fractures of the femur where the diameter and the contour of the bone is more or less uniform. Applied to the lower end of the tibia, the upper end of the ulna, or the lower end of the femur, it is rather difficult. Owing to the mechanical arrangement of the band into the slot, particularly where it is a pyramidal shaped bone, the tightening will be largely string-like in its character, and I am not sure that it will stimulate callous formation or hold it better than a plate and screw nails. Judging from my own experience and those who have used the method, the application of the plate and screw nail is undoubtedly the very best way of fixing a bone by the open method and, when carried out absolutely aseptically, will give probably the best results. I have not used the band personally but I know that when we have used the wire, which is practically the same principle, there has always been the danger of its loosening and letting the fractured ends of the bone free. I wish to say a word, however, about the great value of the open method of treatment and the use of any mechanical means to hold the bone in position, more particularly in fracture of both bones of the forearm at the junction of the middle and lower thirds, in which it is impossible to get perfect anatomical alignment. We had quite a number of these cases, particularly in girls. The plan which we adopted was to make an incision on each side, put the bone in position accurately by the open method, then close the wound up, put in plaster of paris, and after two weeks take out the stitches, begin passive motion, movement and massage, and perfect results were thus obtained without bending or bowing. Another method of fixation, more particularly in fractures of the joints, the elbow, the end of the humerus and also fractures through the upper end of the ulna, is by the use of Lamboth's needle, curved so as to suit the particular case. It can be buried for several weeks and at the end of the fourth or fifth week a small incision is made in the scar, the needle carefully loosened and withdrawn; anatomi-

cally it gives very satisfactory results. In treating by the open method one must be extremely careful to note the general condition of the patient. I have had in my experience untoward results; in one case where I exercised the greatest care in carrying out the technique, a patient, who had fractured his femur, a big powerful man with an oblique wound with a long slant and a great deal of displacement and overriding, within forty-eight hours after the reduction developed an acute streptococcus infection and died; he had been suffering from a tonsillitis. I do not think we get good extension by Buck's method, particularly in oblique fractures; there is the difficulty of overcoming muscular contraction. In bones broken in three portions I have been able to get a very presentable bone with Hay's modification of two Steinman's needles, by introducing two spreaders between and encasing the limb in light bandages.

2. The second paper was given by Dr. J. Appleton Nutter on "Some Common foot conditions and their treatment". (Published in this issue.)

Discussion: Dr. M. Lauterman: I would like to ask to what extent Dr. Nutter thinks gonorrhœal rheumatism is a cause of the conditions described to-night. A great many of the cases are claimed to have had infections and I wonder to what extent gonorrhœa contributes to any of these conditions.

Dr. F. R. England: I would like to know what treatment is carried out where there is a well established rigid foot, and tendency to flat foot with rigidity.

Dr. A. E. Garrow: The best attribute to this paper to-night is that there is no criticism of it. I would only endorse through a very great authority the treatment of these very bad cases of specific pronation. I saw Jones of Liverpool treat a number of these cases on one afternoon. I would like to ask Dr. Nutter's opinion of Morton's metatarsalgia. It is a most excruciatingly painful thing, the toe seems to be held midway between dorsal and plantar flexion. I have found great relief by putting on a thick pad of felt and wearing it for a few days.

Dr. J. Appleton Nutter: As to gonorrhœal arthritis in the foot, this is often the cause of severe deformity. A pronated foot seems to be the favourite result of this infection and at times it may produce a claw-foot or leave the whole foot rigid.

As to the treatment of a rigid flat foot our results have been very satisfactory. We lay great stress on resection of the peroneal tendons followed by plaster of paris in over-correction for six weeks with a brace for a few months longer.

The Canadian Medical Association Journal

With which is incorporated the MONTREAL MEDICAL JOURNAL and the MARITIME MEDICAL NEWS

EDITED BY
ANDREW MACPHAIL
MONTREAL

OLD SERIES VOL. XLVI
NEW SERIES VOL. VII

TORONTO
MORANG & CO. LIMITED
1917

The Canadian Medical Association

Place of Meeting, 1918—Winnipeg, Manitoba.
Honorary President—Sir Thomas Roddick, Montreal.
President—A. D. Blackader, Montreal.
President-elect—James McKenty, Winnipeg.
Vice-Presidents—Presidents of Affiliated Societies and the Presidents of Provincial Societies *ex-officio*.
Secretary-Treasurer—W. W. Francis—*On Active Service*.
Acting Secretary-Treasurer—J. W. Scane, 836 University St., Montreal.
Local Secretaries are the Secretaries of Affiliated Societies and the Secretaries of Provincial Societies *ex-officio*.

EXECUTIVE COUNCIL

Association's Members

Edward Archibald, Montreal.
R. E. McKechnie, Vancouver.
J. Halpenny, Winnipeg
W. A. Lincoln, Calgary.
G. G. Melvin, St. John.
H. A. Lafleur, Montreal.
A. McPhedran, Toronto.
S. E. Grondin, Quebec.
F. N. G. Starr, Toronto.
I. Olmsted, Hamilton.
H. B. Small, Ottawa.
G. S. Cameron, Peterborough.
J. Third, Kingston.
E. A. Braithwaite, Edmonton.
I. Mader, Halifax.

Delegates from Affiliated Associations

Alberta—D. G. Revell, *ex-officio*, Edgar W. Allin, Edmonton; G. E. Learmonth, High River.
British Columbia—I. Glen Campbell, *ex-officio*, A. S. Monro, G. S. Gordon, Vancouver.
Manitoba—Daniel G. Ross, *ex-officio*, Selkirk; James McKenty, Winnipeg.
New Brunswick—F. H. Wetmore, *ex-officio*, Hampton; J. S. Bentley, St. John; G. C. VanWart, Fredericton.
Nova Scotia—J. W. Smith, *ex-officio*, Liverpool, D. Fraser Harris, J. G. Macdougall, Halifax.
Ontario—J. P. Morton, *ex-officio*, Hamilton; D. J. Gibb Wishart, H. B. Anderson, H. J. Hamilton, Toronto.

Finance Committee

A. D. Blackader. James Third. Edward Archibald. S. E. Grondin. H. A. Lafleur.

STANDING COMMITTEES

On Medical Legislation

R. W. Powell, Ottawa, Chairman (with power to add)

On Amendments to Constitution and By Laws

H. B. Small, Ottawa, Chairman (with power to add).

Public Health and Hygiene

G. G. Melvin, St. John, Chairman (with power to add).

On Necrology

Gordon G. Campbell, Montreal, Chairman (with power to add).

On Reports of Officers

J. Halpenny, Winnipeg, Chairman (with power to add).

On Medical Education

R. A. Reeve, Toronto, Chairman (with with power to add).

Local Correspondents

F. C. Neal, Peterborough, Ont.
G. Clowes Van Wart, Fredericton, N.B.
D. Fraser Harris, Halifax, N.S.
James Third, Kingston, Ont.

EDITORS

Editor—Andrew Macphail, *On Active Service*.
Assistant Editor—W. W. Francis, *On Active Service*.
Acting Editors—G. G. Campbell, and Maude E. Abbott, 836 University St., Montreal.

The Canadian Medical Association Journal

ANDREW MACPHAIL, Editor (*On Active Service*)

G. G. CAMPBELL and MAUDE E. ABBOTT, Acting Editors

836 University St., Montreal

Yearly in Advance $5.00 — Single Copies, 50c.

Advertisements or business communications are to be addressed to the Publishers, Morang & Co., Limited, 386 Victoria Street, Toronto All matter for publication should be addressed to the Editors, 836 University Street, Montreal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript. Applications for membership and remittances for fees should be addressed to the Acting Secretary-Treasurer, Dr. J. W. Scane, 836 University Street, Montreal

VOL. VII — TORONTO, DECEMBER, 1917 — No. 12

Contents: